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STEEL

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PRODUCTION · PROCESSING · DISTRIBUTION · USE

THE SCOTCH HAVE A VERSE FOR IT

Tender-handed stroke a nettle
And it stings you for your pains.
Grasp it like a man of mettle
And it soft as silk remains.

—old Scotch proverb

THIS YEAR, don't temporize. Don't try to get by with materials which were good enough in less competitive times. Use modern alloys containing Nickel to cut production and operating costs, reduce the heavy tax imposed by corrosion and wear.

Nickel helps each ounce and inch of metal do more work at lower cost per year. Nickel aids in solving many of the thorniest problems confronting you in 1939. The helpful suggestions of our research engineers, their practical experience in solving similar metallurgical problems for other businesses, are yours for the asking.

LANDSLIDES CLEARED QUICKER because this shovel is 28% lighter. Harnischfeger Corp., Milwaukee, makes it of a light-weight design using high-strength Nickel alloy steels.

NICKEL ALLOY STEELS

ANCHORS AWEIGH! But they weigh less, withstand salt water corrosion longer. These chains are cast from strong, tough Nickel-chromium steel at the Norfolk Navy Yard.

TWO POUNDER GRINDS AT 50,000 RPM! For the vitally important spindle of this fly-weight, air-driven grinder and die finisher the Onsrud Machine Works, Chicago, uses SAE 3135 steel toughened and strengthened with Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.

STEEL
PRODUCTION • PROCESSING • DISTRIBUTION • USE

As the Editor Views the News

■ INDUSTRY as now organized in this country could not become prepared for war in less than six to twelve months, according to expert opinion (p. 15) at the 150th meeting of the American Institute of Mining and Metallurgical Engineers last week. This period, it is hoped, can be shortened as a result of military "educational" orders authorized by congress. Accumulation of reserves of imported strategic materials, as provided (p. 25) under pending legislation, was urged. . . . T. M. Girdler, who, as president of the American Iron and Steel institute, ranks as steel's chief spokesman, declared at this meeting that the steel industry abhors war. War profits, he said, bring no lasting benefits and war leads to grave problems of dislocation.

• • •

Impressive newcomer among house organs aimed at improved industrial relations is *Republic Reports,* in which (p. 18) Republic Steel Corp. informs employes how its income is distributed. It dwells on the gravity of the problem of earning a small profit for stockholders. . . . This is an important factor in determining the amount of money the steel industry spends in plant improvement. This year (p. 17) the industry will invest substantially less on expansion than in 1938. Were the profit possibility more promising, the industry undoubtedly would spend much more money and thus provide more employment in the capital goods industries. . . . Forty per cent of the plants in the United States for making finished steel (p. 17) now are small, nonintegrated establishments, the Iron and Steel institute reports.

Informs Employes

• • •

Steel output moved up another point last week (p. 19) to 55 per cent of ingot capacity. Heavy additional buying of automotive steel (p. 30) is imminent. The index for machine tool orders (p. 17) moved up again in January. Legislation to get the national defense program under way (p. 25) is going through the mill at Washington. France (p. 33) has increased its orders for American fighting planes to 615 with an aggregate outlay of about $65,000,000. . . . Progress is reported (p. 27) in the development of methods for galvanizing malleable castings by the hot-dip process without embrittlement. . . . Interstate commerce commission (p. 80) has authorized construction of 20 fusion welded tank cars for experimental service in transporting petroleum products.

Tool Order Index Up

• • •

In the Forum on Re-employment in this issue (p. 38) a young machine tool executive makes recommendations that take into account the increased sensitivity which now characterizes employe-employer relations. Modernization of all industrial washrooms not only would provide great impetus to re-employment, but would make for better relations. He mentions other practices which move toward these objectives. . . . Notable addition to brass and copper rolling capacity (p. 40) is the new straightline mill of Revere Copper & Brass Inc., at Rome, N. Y. It is highly mechanized and is operated under a central production control setup. . . . Cost of drawing and forming dies for a leading tractor manufacturer (p. 56) was reduced by casting them to shape in a suitable alloy metal.

Greater Sensitivity

• • •

To furnish slabs for the new Irvin works, Carnegie-Illinois Steel Corp. built a huge new slabbing mill at the Edgar Thomson works. It has (p. 50) many interesting features. . . . Much progress has been made in the development of fasteners which permit invisible joints (p. 44) so that truck bodies and other fabrications can be produced with smooth, unbroken surfaces. . . . Hydraulic lift platforms are used to advantage in a new crankshaft plant so located that deliveries and shipments are handled by motor trucks; the lift platforms (p. 47) bridge the gap between the plant floor and the truck floors. . . . Much can be learned from the description (p. 58) of a highly developed heat treating and metallurgical control used by a manufacturer of a diversified line of screw and related products.

Invisible Fasteners

E C Kreutzberg

INLAND solves forming and deep drawing problems

Here in Inland's modern mills and sheet finishing departments, the ductility and temper of iron and steel sheets and strip undergo profound changes.

Here many difficult forming or deep drawing problems are solved. They are being solved for Inland customers every day. They can be solved for you.

Here the workability required for the deep drawing of a washing machine tub or bullet-type automobile fender, or the stiffness required of a door panel are bred into Inland sheets and strip by heat treatment.

Cut Down Spoilage Costs

Spoilage is prevented by knowing your exact requirements. For example, one manufacturer had resorted to spot annealing with a blow torch to prevent breakage when the edge of a deep-drawn receptacle was turned down in a later operation.

Since using Inland sheets specially annealed for his purpose, this operation has been entirely eliminated at considerable saving . . . and there has been practically no spoilage from the second forming operation.

Don't Overlook a Problem

His problem was solved through the call of an Inland metallurgist at his plant. The economy was unexpected. Such an opportunity may exist in your plant, too. An Inland metallurgist will gladly check the possibility with you or your shop men. There is no cost or obligation for his service.

INLAND STEEL CO.

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SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

Storage of Essential Minerals Urged

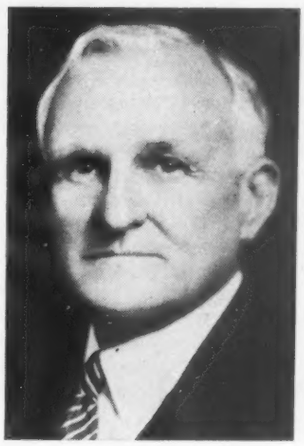
As National Defense Measure

■ MATTERS pertaining to national defense came in for close consideration at the 150th meeting of the American Institute of Mining and Metallurgical Engineers in New York, Feb. 13-16.

Rear Admiral Clark H. Woodward, commandant, third naval district, covered many features in his discussion of industry's relation to the country's defense program; T. M. Girdler, chairman, Republic Steel Corp., Cleveland, urged the storage of a 2-year supply of seven important nonferrous metals, for which the steel industry has to rely largely upon foreign sources—seven out of 12; and other speakers reflected thought being directed to armaments and general preparedness.

The meeting, which drew approximately 2400 members, a figure comparable with a year ago, provided for the presentation of more than 200 technical papers. Two sessions on surface qualities of steels, one devoted exclusively to stainless steels and two sessions on physical chemistry of steelmaking featured the Iron and Steel division meetings, while two sessions on high-purity metals were highlights of the Institute of Metals division meetings.

Robert H. Leach
Elected chairman, Institute of Metals Division, A. I. M. E.



Donald B. Gillies
Installed as president, American Institute of Mining and Metallurgical Engineers

Donald B. Gillies, vice president Republic Steel Corp., Cleveland, was inducted into office as president at the annual banquet at the Waldorf Astoria, Feb. 15, at which time also various medals and honors were conferred. Herbert C. Hoover, was an honored guest.

New institute directors include: Charles Camsell, deputy minister, department of mines and resources, Dominion of Canada, Ottawa, Ont.; Chester A. Fulton, president, Southern Phosphate Corp., Baltimore; James T. MacKenzie, metallurgist and chief chemist, American Cast Iron Pipe Co., Birmingham, Ala.; and Francis A. Thomson, president, Montana School of Mines, Butte, Mont.

Awards Are Presented

The William Lawrence Saunders gold medal was presented to Louis S. Cates, president, Phelps Dodge Corp., New York, for "signal accomplishment in the conception and application of superior mining technique and the organization and administration of major mining and metallurgical enterprises."

The Robert W. Hunt award for 1939 was presented to Dr. John Chipman, professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., and Kenneth C. McCutcheon, assistant general superintendent, Ashland division, American Rolling Mill Co., Ashland, Ky., for their paper, "Evolution of Gases from Rimming Steel Ingots," presented at the meeting a year ago.

The Institute of Metals division award went to Frederick N. Rhines, assistant professor of metallurgy, and Robert F. Mehl, director of the metals research laboratory, Carnegie Institute of Technology, Pittsburgh, for their paper, "Rates of Diffusion in Alpha Solid Solutions of Copper," presented at last year's meeting.

Insignia of the Legion of Honor to members of the class of 1889 were presented to Walter H. Aldrich, Alonzo F. Bardwell, Thomas Fisher, Martin L. Griffin, Robert A. Hadfield, A. B. W. Hodges, Reginald F. Jopling, E. P. Mathewson, Henry B. Seaman, F. F. Sharpless, Thomas B. Stearns, Enrique Touceda and Ernest R. Woakes.

The Institute of Metals annual lecture, "Creep of Metals," was delivered by Daniel Hanson, professor

John H. Nead
Elected chairman, Iron and Steel division, A. I. M. E.

of metallurgy, University of Birmingham, England; and the Howe lecture, "Some Things We Don't Know About the Creep of Metals," by H. W. Gillett, chief technical advisor, Battelle Memorial institute, Columbus, O.

John H. Nead, chief metallurgist, Inland Steel Co., Chicago, will serve as chairman of the Iron and Steel division for the ensuing year, it was announced. C. H. Herty Jr., research engineer, Bethlehem Steel Co., Bethlehem, Pa.; Frank T. Sisco, metallurgist editor, Alloys of Iron Research, Engineering Foundation, New York; and Earle C. Smith, chief metallurgist, Republic Steel Corp., Cleveland, have been named vice chairmen. John Chipman, professor of metallurgy, Massa-

Kenneth C. McCutcheon
Co-recipient of A. I. M. E. Robert Woolston Hunt award

chusetts Institute of Technology, Cambridge, Mass.; H. J. French, charge of alloy steel and iron division, International Nickel Co. Inc., New York; and H. W. Graham, general metallurgist, Jones & Laughlin Steel Corp., Pittsburgh, have been appointed to the executive committee for three years.

R. H. Leach, engineer, Handy & Harman, Bridgeport, Conn., will serve as chairman of the Institute of Metals division, and D. K. Crampton, Chase Brass & Copper Co., Waterbury, Conn., and E. M. Wise, metallurgist, International Nickel Co. Inc., Bayonne, N. J., vice chairmen. Francis H. Clark, metallurgist, New York; W. L. Fink, research metallurgist, aluminum research laboratory, Aluminum Co. of America, New Kensington, Pa.; and J. T. Norton, associate professor, physics and metals, Massachusetts Institute of Technology, Cambridge, Mass., have been elected to the executive committee for three years.

C. A. Gibbons, technical advisor, testing machine division, Baldwin-Southwark Corp., Philadelphia, has been named chairman of the coal division, and C. E. Lawall, director of school of mines, University of West Virginia, Morgantown, W. Va., vice chairman. H. L. Griffin, mining superintendent, Hanna Coal Co. of Ohio, Zaffarty, O.; H. F. Herbley, Commercial Testing & Engineering Co., Chicago, and Henry H. Otto, Hudson Coal Co., Scranton, Pa., have been appointed to the executive committee for three years.

Industry at present, Admiral Woodward declared, is not prepared to develop war materials on the mass production basis required in an emergency. He doubted if it could become prepared, even under pressure, within a period of at least six months or a year. This is due, he said, to industry's unfamiliarity with the manufacture of certain essential war items and to a lack of proper machine tools and equipment.

He believed, however, that this serious situation can and will be overcome by so-called "educational orders" authorized by Congress last year. The $2,000,000 to be appropriated annually for the next five years is insufficient; nevertheless, he pointed out, it will permit certain selected manufacturing plants to proceed with sample orders in times of peace. Thus tooled up these plants can easily expand into mass production and be ready for any crisis.

"Should we ever have to go to war again, which God forbid, we cannot afford to find ourselves in the same unorganized mess as in 1917-18, nor repeat our muddling experience of that period," he said. "We will probably never again have allies which will stand off the enemy for even six months, to say nothing of fourteen. In the future we will have to depend upon our own supplies and munitions and on our own merchant marine."

Metal Supplies Inadequate

Mr. Girdler pointed out that while this country is well supplied with some important materials and has on hand an abundance of iron and steel and limestone, it is wholly or in part dependent upon foreign supplies for chromium, nickel, tin, manganese, cobalt, tungsten and vanadium.

"Although we consume 40 per cent of the world's chromium, our production is insignificant," he said. "We consume 10 per cent of the world's cobalt and produce none of it. We consume 20 per cent of the manganese, but produce very little. Of nickel and tin, with an insignificant production, we use 50 per cent and 45 per cent of the world's production, respectively. With respect to tungsten and vanadium, production lags far behind consumption."

These materials, he pointed out, are all essential to the modern steel industry, and in peace or in war it is imperative that they be available in adequate supply. "We think nothing of spending $50,000,000 for a single battleship," he added. "An equal amount spent for an adequate stock of essential metals, which must be imported, would be most reasonable and forehanded. God grant that this country does not become involved in a war, yet even if we are at peace, while other nations are at war, our supplies of imported metals might be cut off for long periods.

"While we are on the subject," he continued, "I would like to say just a word here about the feeling of the steel industry toward war. The impression prevails that the steel industry looks eagerly at prof-

John Chipman
Co-recipient of A. I. M. E. Robert Woolston Hunt award

its from war. That is not true. War brings no genuine prosperity to the steel industry. Any temporary profits which may come from extreme activity of plants during a conflict such as the World war are of no lasting benefit to the industry.

"The records of the years subsequent to the war prove that postwar economic distress tends to dissipate any accumulation of earnings during the war which remain after the payment of war profit taxes.

"As far as the steel industry as a whole is concerned, it has little direct interest in the production of such war material as ordnance and armor plate since only very few companies are equipped to make these products

"Certainly the industry owes it to the country to have adequate equipment available for the production of implements of defense should these needs become inevitable.

"Laying aside all narrow considerations, the steel industry abhors war and fervently hopes for

(*Please turn to Page* 68)

$126,000,000 Scheduled for Steel Industry's Construction, Equipment

■ ABOUT $126,000,000 will be spent by steel companies during 1939 for new construction and equipment, according to reports received by the American Iron and Steel institute from 150 companies representing more than 90 per cent of the industry's capacity.

The industry's proposed expenditures for new equipment this year raise the total spent or to be spent for such purposes since 1934 to nearly $1,000,000,000.

The amount budgeted for 1939 is less than was spent in any of the preceding four years, and represents a decline of about 25 per cent from 1938, when $165,000,000 was earmarked for new construction and expansion.

In addition to the expansion programs covered in their estimates for 1939, however, a number of companies indicated that certain additional projects now under consideration might be started in 1939 if the business outlook improves sufficiently.

The prospective decline in new equipment and construction expenditures this year reflects not only the generally unprofitable level of steel operations last year, but also the fact that most of the major plant expansion programs which have been in progress during the past several years have now been completed or are nearing completion.

In 1935 the steel industry's expenditures for new equipment and construction amounted to $140,000,000. In the following year such expenditures increased to a total of $216,000,000. In 1937 the amount was $320,000,000. In 1938, actual expenditures were $140,000,000.

Modernizing of existing equipment is the principal item of the industry's construction program for 1939. No new continuous hot sheet mills, blast furnaces or steel furnaces are reported building.

Forty Per Cent of Plants Now Making Finished Steel, Small, Nonintegrated

■ NUMBER of small, nonintegrated steel plants which do not manufacture steel ingots has increased threefold over the past 50 years, according to the American Iron and Steel institute.

Over the same period, the number of integrated plants producing steel ingots as well as finished products has declined 40 per cent.

Total capacity of the steel industry for producing finished products today is 600 per cent higher than in 1889, however, reflecting not only the increase in the number of nonintegrated producers but also the much greater capacity of present-day integrated companies as compared with those of 1889.

Of the present total of 361 plants for producing finished steel products, 139 or almost 40 per cent are plants of nonintegrated companies producing principally cold-finished steel bars, cold-rolled strip steel, sheets, tin plate, butt-weld pipe, seamless tubes and wire products. Nonintegrated producers represent substantially 50 per cent of the steel industry's total capacity for producing cold-rolled strip and cold-finished bars, and are important producers of other classes of products.

Fifty years ago, 46 nonintegrated plants in the industry represented only 11 per cent of the total 417 finishing mills then in existence. Their principal products were iron bars and iron wire re-rolled from old material.

Plants for producing finished steel products are located today in 27 states. Pennsylvania leads with 116 such plants, followed by Ohio with 63, Illinois with 33, New York with 20, Indiana with 17, Massachusetts and New Jersey with 16 and Michigan with 13.

In 1889, Pennsylvania had 187 such plants, Ohio 59, Illinois 21, New York and New Jersey 20, Massachusetts 15, Indiana 13 and Delaware 10.

Maine, New Hampshire, Iowa, Kansas and Wyoming each had one plant making steel products in 1889 but have none today. Oklahoma, Oregon and Washington, however, have gained one or more plants during the half-century.

New Utensils Combine Stainless Steel, Copper

■ The discovery of how to join stainless steel with copper permanently is expected to open an entire new outlet for copper, says C. Donald Dallas, president, Revere Copper & Brass Inc.

The company's new utensils are known as Revere Ware and are the result of more than two years of extensive research.

"The volume of cooking utensils runs about $75,000,000 annually," according to Mr. Dallas. "If we can judge by the enthusiastic reception given this new departure in domestic utensils, Revere Ware should be able to capture a very definite percentage of this field in addition to increasing the total sales volume of utensils by creating new markets."

Pratt & Whitney To Have New Manufacturing Plant

■ Work on a new plant for Pratt & Whitney division, Niles-Bement-Pond Co., Hartford, Conn., will be started as soon as weather conditions permit and the company is expected to move from its present location early next fall.

Directors have approved plans for the new factory, to include a 1-story manufacturing building, a 2-story office building, and a 2-story pattern storage, with garage and power plant. Floor space will total approximately 700,000 square feet.

Pratt & Whitney has occupied its present quarters for 79 years. Directors for a long time have recognized the present buildings were inadequate for manufacture of the company's product and two years ago purchased a 120-acre tract in West Hartford, known as Charter Oak park. Ten years ago the heaviest machine manufactured by the company weighed 12,000 pounds; last year several weighing as much as 80,000 pounds were produced.

Niles-Bement-Pond declared a dividend of 50 cents a share, payable March 15 to record March 4. President Clayton R. Burt reported net earnings for 1938 were $844,000 after taxes and other deductions. Unfilled orders Jan. 1 amounted to $1,892,000; incoming orders for January amounted to $900,000, a substantial increase over previous months.

January Tool Orders Exceed Any 1938 Month

■ Stronger domestic demand brought the January machine tool orders index to 150.8, compared with 146.5 in December, and 112.2 in November, according to the National Machine Tool Builders' association, Cleveland. January orders exceeded those for any month in 1938.

The three months average index is 136.5, compared with 125.6 in December, and 129.6 a year ago.

$30 for Payroll to $1 for Share Holders, Republic Tells Employes

■ FOR EVERY dollar paid in dividends since Jan. 1, 1935, Republic Steel Corp. employes have received $30. Taxes have taken $1 for every $11 paid to employes, and government—federal, state and local—has required nearly three times as much money as has been paid to the stockholders whose investment made possible the company's operation.

These and other pertinent facts are made known to the company's employes through *Republic Reports*, just issued to them.

Depressed operations reduced the company's 1938 payroll as compared with 1937 by approximately 36 per cent, while dividend payments were about 90 per cent less. During the year the company sustained a $7,997,825 loss.

Company's net profit, taxes, payroll and dividends for past four years:

	Net Profit	Taxes	Payroll	Dividends
	(In thousands of dollars)			
1938	$7,998*	$5,548	$58,505	$ 423
1937	9,044	9,335	91,354	3,847
1936	9,587	6,923	74,616	4,823
1935	4,456	2,777	49,817	None
Total	$15,089	$24,582	$274,293	$9,093

*Net loss.

Normally the company employs 50,000 to 55,000 persons. About $7000 investment is required for every job.

During the past five years, Republic has spent nearly $57,000,000 for new construction and to keep older plants and machinery modern and up-to-date. That sum is equivalent to approximately $1140 for each employe.

The pamphlet also indicates how the company benefits the communities in which it operates. Expenditures in normal years have reached nearly a quarter billion dollars in towns where its principal plants are located. Largest expenditure is in Youngstown, O., with $36,000,000; second is in Warren, O., with $34,000,000; third, Cleveland, $33,000,000.

Writes Chairman T. M. Girdler: "On the whole, I think we may reasonably expect a better year for steel operation in 1939 than in 1938. How much better it will be, or how much longer the improvement will last, I do not pretend to know. The big problem facing the steel industry is how to earn even a small profit. In 1938 there was a loss and over the last nine years the average annual return on investment in the industry was only 1½ per cent.

"During this same period Republic Steel instead of showing profit of even 1½ per cent, lost money. During 1938, despite reduced operations and lower prices, various factors of cost such as wages continued at the highest levels in the industry's history."

ONLY 3 PER CENT FEWER WORKERS; HALF THE OUTPUT

Despite the fact output of steel ingots in 1938 was nearly 50 per cent below the tonnage produced in 1929, the average number of employes on the payrolls of the industry last year was only 3 per cent below 1929, American Iron and Steel institute reports. Total payrolls were only 27 per cent below 1929.

Compared with 1937, steel production last year dropped 44 per cent, while employment and total payrolls were down 23 per cent and 37 per cent, respectively.

During 1938 an average of 443,000 men were employed by the industry, as against 458,000 in 1929, and 572,000 in 1937. Steel payrolls last year totaled $613,000,000, compared with $841,000,000 in 1929, and with $976,000,000 in 1937.

Production of open-hearth and bessemer ingots last year was 27,839,000 gross tons, as against 54,312,000 gross tons in the peak year 1929, and 49,503,000 in 1937.

Steel employment in 1938 was 8 per cent higher than at the beginning of the five-year period 1934-38, and payrolls were 34 per cent higher. Over the same period production rose 8 per cent.

Steel employment in 1934 averaged 409,000, and payrolls totaled $458,000,000. Steel output in 1934 amounted to 25,599,000 gross tons.

Hourly earnings of wage earners in 1938 averaged 83 cents per hour, compared with 82 cents in 1937, 63 cents in 1934, and 65.4 cents in 1929.

HONORS EMPLOYES; CHARTS COMPANY'S BUSINESS AFFAIRS

MacWhyte Co., Kenosha, Wis., manufacturer of wire rope, on the occasion of its annual family party recently presented gold watches and certificates of service to 18 employes with 25 years service; certificates to 34 employes with 20 years service, to 56 of 15 years service and others with 10 and 5-year records.

The dinner was the closing event of the annual three-day conference of salesmen. A feature was the company's annual report to employes, reviewing the company's business, and illustrating with charts the course of production, sales and division of earnings. The latter included four bonus payments to employes as part of the profit-sharing plan.

RENEWS AMALGAMATED PACT

Northwestern Steel & Wire Co., Sterling, Ill., has renewed its contract with the Steel Workers Organizing committee and the Amalgamated Association of Iron, Steel and Tin Workers. New contract, which is identical with the present pact, will expire Feb. 29, 1940.

Idle Men, Idle Machines, Idle Money!

■ "THERE are three fundamental reasons why recovery in the United States is so slow," says the National Industrial Conference board, New York, in a current pamphlet.

"IDLE MEN. Since 1930 the waste of labor time through unemployment reaches the appalling total of 80 million work years. This problem becomes constantly more acute because the growth of the population adds about 600,000 new workers a year to the available labor force.

"IDLE MACHINES. Despite agitation for the 40-hour week, the average work week in manufacturing industries has not attained that level since 1931, and since 1932 has been 11 hours less than in 1929, the peak year of our prosperity. Idle men and shorter hours mean idle machines. Today, the machines which do the greater part of the work performed in modern industry stand idle about one-fourth of the time they were in use in 1929.

"IDLE MONEY. The amount of money lying practically idle is greater today than at any previous time in our history. We have more money to lend for productive purposes than ever before. The proportion of loans to our total bank deposits and net capital funds averaged 39 per cent for the last five years, against 63 per cent for the preceding 11 years. The surplus of bank deposits and net capital funds over total loans and investments has more than trebled in the last five years."

■ United States district court, Pittsburgh, has granted permission to trustees, Follansbee Bros. Co., Follansbee, W. Va., to spend $14,200 for installing an electric annealing furnace at the company's Toronto, O., plant, and repairs to the cold reduction mill at Follansbee. Trustees stated the repairs would increase the cold mill's capacity approximately 35 per cent.

Personnel "Key To Recovery"

■ FIFTEEN THOUSAND attended the conference of the personnel division, American Management association, Palmer House, Chicago, last week. Major steel companies were represented.

C. M. Chester, chairman, General Foods Corp., and former president, National Association of Manufacturers, stated: "In spite of paralyzing tax burdens and worldwide economic disorders we still can recreate recovery here at home through self-improvement. The beginning lies in a widespread betterment in industrial relations. That is No. 1. It is only when we help the employes to improve themselves economically and technically that a real start is made."

Mr. Chester emphasized the possibility of an eighty billion dollar national income held up as a goal by President Roosevelt. "In 1936," he stated, "gross manufacturing income was close to fifteen billion dollars. A 25 per cent increase in efficiency would do more to stimulate re-employment and economic recovery than twice 3¾ billions expended by government pump priming."

Answer Wage-Hour Queries

Featured in the program was a question and answers forum on wages and hours, conducted by Orion J. Libert, acting midwest area director, wages and hours division, department of labor.

State wages and hours legislation and the Walsh-Healy act were discussed by Henry Clifton Jr., McLanahan, Merritt & Engleham, while changes in social security was the topic of J. W. Douglas Brown, director, industrial relations section, Princeton university, and chairman, advisory council on social security.

W. R. Coley, factory manager, Leeds & Northrup Co., Philadelphia, said job evaluation has two fundamental objectives: It places employes on their merits; it inspires the employe to improve his education and ability.

H. H. Kerr, president, Boston Gear Works, North Quincy, Mass., discussed merit rating plans in improving employe relations and emphasized problems of seniority.

C. Canby Balderston, professor of industry, University of Pennsylvania, Philadelphia, spoke on regularization of employment, while William Conover, assistant director of industrial relations, United States Steel Corp., Pittsburgh, spoke on standards of executive performance, discussing evaluation of positions in the higher brackets.

District Steel Rates

Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended Feb. 18	Change	Same week 1938	Same week 1937
Pittsburgh	47	+ 1	29	86
Chicago	52.5	+ 1.5	24.5	80.5
Eastern Pa.	37	+ 1	30	56
Youngstown	45	+ 1	29	80
Wheeling	66	+ 2	44	80
Cleveland	56.5	None	33	79.5
Buffalo	35	— 2	21	86
Birmingham	83	+ 3	61	71
New England	70	None	27	86
Cincinnati	55	None	22	60
St. Louis	55	+ 5	28	82
Detroit	89	— 5	48	94
Average	55	+ 1	31	83

Industrial Locomotive Company Reorganized

■ A plan by which the H. K. Porter Co., Pittsburgh, has been taken over by its bondholders has been confirmed by federal court. The bondholders' reorganization committee's plan provides for the 73-year-old industrial locomotive manufacturing concern to emerge from the reorganization debt-free and with a net working capital of more than $250,000.

T. M. Evans

T. M. Evans, formerly associated with Gulf Oil Corp., has been elected president. New directors include H. C. Bughman Jr., president, Union Spring & Mfg. Co.; Q. S. Snyder, vice president, Blaw-Knox Co.; Christian Z. Schove, attorney; H. R. Donnaly, president, Iron & Glass Dollar Savings bank, and Mr. Evans.

■ Laminated Shim Co., Long Island City, N. Y., recently celebrated its twenty-fifth anniversary. C. N. Aborn, president, and Louis R. Tiemann, in charge of plant and tool maintenance, have been continuously with the company from its beginning and many employes have records of 10 to 20 years.

PRODUCTION

■ STEELWORKS operations last week advanced 1 point to 55 per cent, the highest rate since the middle of December. This compares with 31 per cent in the corresponding week last year. Small increases were made in seven districts, declines in two and in three there was no change.

Youngstown, O.—Addition of two open hearths late last week caused the average rate to rise 1 point to 45 per cent, with 40 open hearths and three bessemers in service. For this week the schedule is 47 per cent, with one more open hearth active.

Cleveland—Held at 56.5 per cent; no change is indicated this week.

St. Louis—Gained 5 points to 55 per cent, the highest rate since Oct. 7, 1937. Three open hearths were added and two taken off.

Chicago—Advanced 1.5 points, the third consecutive increase. The leading interest showed a fractional loss; one independent is at capacity.

Detroit—Loss of 5 points to 89 per cent resulted from Great Lakes Steel Corp. taking off three furnaces at midweek. Ford continues nine furnaces in production.

Birmingham, Ala.—Up 3 points to 83 per cent as Tennessee Coal, Iron & Railroad Co. lighted its thirteenth open hearth, a total of 19 for the district.

Cincinnati—Steady at 55 per cent for the third consecutive week, with the same schedule for this week.

New England—Unchanged at 70 per cent, the same expected this week.

Pittsburgh—Increased activity by smaller producers advanced the rate 1 point to 47 per cent. Further increase is indicated.

Wheeling—Rose 2 points to 66 per cent as one producer enlarged output.

Central eastern seaboard—Advanced 1 point to 37 per cent, highest since mid-December.

Buffalo—Dropping of one open hearth caused a loss of 2 points to 35 per cent.

■ York Ice Machinery Corp., York, Pa., reports sales for the four months, October, 1938 to January, 1939 were 11 per cent ahead of the corresponding period a year ago. Sales in January exceeded by more than 50 per cent those in the month last year.

■ Thirty-four licenses were granted during January for exportation of tin-plate scrap. These shipments all went to Japan, totaling 2396 long tons and valued at $43,574.25.

Activities of Steel Users, Makers

■ INTERNATIONAL Meehanite Metal Co. Ltd., London, England, subsidiary of Meehanite Metal Corp., Pittsburgh, has licensed C. A. Parsons & Co. Ltd., Newcastle-on-Tyne, England, maker of industrial turbines, to manufacture Meehanite metal, for production of various castings.

♦

American Institute of Steel Construction Inc., New York, has moved to 101 Park avenue.

♦

Hilo Varnish Corp., Brooklyn, N. Y., held a conference of its western sales staff in Chicago, Jan. 27. Similar conferences every three months are being considered.

♦

Osborn Mfg. Co., Cleveland, has appointed the following agents for the sale of molding and core blowing machines and accessories: Grant & Co., 2144 East Seventh street, Los Angeles, in southern California and Arizona; Snow & Galgiani, 537 Second street, San Francisco, with a branch at 305 N. W. Twelfth avenue, Portland, Oreg., for central and northern California and Oregon.

♦

Graton & Knight Co., Worcester, Mass., has taken over the Scherer Leather Co., Cudahy, Wis., and will continue to operate the plant on a trial basis for six months. A. I. and G. H. Scherer, executives of the Cudahy firm, have become associated with Graton & Knight.

♦

American Brake Shoe & Foundry Co., New York, has opened a Pittsburgh office at 508 Grant building for the American Manganese Steel division, represented by J. A. Brandenburg, and the A-B-K Bearing division, represented by R. C. Prall.

♦

National Enameling & Stamping Co., Milwaukee, which started to transfer some of its operations to factories in other cities last fall, will close its tinware department at Milwaukee March 15. The kitchenware division will be taken to Granite City, Ill., and Baltimore, where economic factors are said to be more favorable. The only manufacturing branch to remain in Milwaukee is the stove and heater division.

♦

Philco Radio & Television Corp., Philadelphia, has acquired the appliance division of Fairbanks, Morse & Co., Indianapolis, for manufacture primarily of electric refrigerators. Officers of the new organization, to be known as the Philco Refrigerator Co., are: President, W. Paul Jones, formerly executive vice president, home appliance division of Fairbanks-Morse; treasurer, W. R. Wilson; secretary, C. F. Steinruck Jr. Plans for retooling the refrigerator company at a cost of about $50,000, to increase production, are being completed.

Wisconsin Foundrymen at Regional Conference

■ About 600 foundrymen attended the second annual regional foundry conference in the Schroeder hotel, Milwaukee, Feb. 16 and 17, under joint sponsorship of the Wisconsin chapter, American Foundrymen's association, and department of mining and metallurgy, University of Wisconsin.

The technical program was prepared by a committee including Ralph S. MacPherran, Allis-Chalmers Mfg. Co., in charge of gray iron; Edward Meyer, Chain Belt Co., malleable iron; David Zuege, Sivyer Steel Casting Co., steel; Oscar Frohman, Ampco Metal Co., and B. D. Claffey, General Malleable Corp. and Werra Aluminum Corp., in charge of nonferrous. Charles I. Wesley, Wesley Steel Treating Co., and Prof. E. R. Shorey, University of Wisconsin, served as co-chairmen of the conference committee.

Dean Ellis Johnson, University of Wisconsin, in welcoming the delegates compared pioneer with present conditions. The conference then divided into sessions on gray iron, steel, malleable and nonferrous foundry practice.

"Flirting with Patterns," was the title of an address by L. W. Rogers, College of the City of New York, delivered at the noon luncheon meeting. He said opportunities for men of initiative are greater than ever.

At a joint meeting in the afternoon, job valuation was described by Charles W. Pendrock, president, Leroi Co., and Edward L. Roth, president, Motor Castings Co., Milwaukee. William Beard, Atlanta, Ga., spoke at the Thursday night banquet.

Special sessions on the four main divisions, gray iron, steel, malleable, nonferrous, were Friday morning and afternoon. Joint meeting at 1:30 p. m. was addressed by M. J. Gregory, Caterpillar Tractor Co., Peoria, Ill.

FREDERICK A. LORENZ MEDAL
STEEL FOUNDERS' SOCIETY OF AMERICA
FOR MERITORIOUS SERVICE TO THE STEEL CASTING INDUSTRY
AWARDED TO
INTEGRITY RESEARCH PROGRESS

Malleable Founders Add Development Engineer

■ James L. Cawthon Jr. has been appointed to the newly-created post of development engineer for the Malleable Founders' society, Cleveland. In announcing the appointment, Robert E. Belt, secretary-treasurer, explained the society is inaugurating a new activity, which will include furnishing technical data to users of malleable castings, engineering new uses for the material and other product development engineering services to users and society members.

Mr. Cawthon has been associated with the iron, steel and foundry industries for 19 years, in engineering, production, sales and advertising and executive activities. He has been associated with Pittsburgh Electric Furnace Corp., General Motors Corp., the Bonney-Floyd Co., American Steel Foundries, and Continental Steel Foundries. In his new position he also will carry on the society's co-operative educational work with technical schools.

Enrique Touceda is the society's consulting engineer; James H. Lansing is shop practice engineer.

Lorenz Medal First Presented to Family

■ First award of the Frederick A. Lorenz memorial medal established by the Steel Founders' Society of America in honor of the late Frederick A. Lorenz Jr., was made to Mr. Lorenz' family. Frank M. Robbins, president of the society, made the presentation at the society's annual meeting in Chicago, Feb. 9.

Mr. Lorenz served as president of the Steel Founders for five years before his death.

The medal will be awarded at each annual meeting to a member of the industry adjudged by the directors to have made the most outstanding contribution toward the industry's advancement in the preceding year.

MEETINGS

A.I.S.E. COMPLETES PROGRAM FOR SPRING CONFERENCE

■ PROGRAM for the annual spring conference of the Association of Iron and Steel Engineers at the Tutwiler hotel, Birmingham, Ala., March 27-28, has been announced. Features of the first day are a morning technical session, a luncheon, an afternoon inspection of the American Cast Iron Pipe Co., and a dinner. The second day will be devoted to a visit to properties of the Tennessee Coal, Iron & Railroad Co.

A. B. Haswell, assistant to vice president, Tennessee Coal, Iron & Railroad Co., will speak at the luncheon, and Robert Gregg, president of the company, will address the banquet.

Papers scheduled for the two technical sessions are as follows: "Relay Protective Methods for Steel Mill Service," by H. A. Travers, power system engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; "Modern Wire Drawing Practice," by J. J. Phifer, superintendent, Fairfield works, Tennessee Coal, Iron & Railroad Co., Birmingham; "General Types of Lubricants Essential to the Steel Plant," by William Mandy, Texas Co., Birmingham; "Modern Pit Design and Practice at Fairfield Works," by E. A. Hawk, fuel engineer, and M. P. Burns, assistant fuel engineer, Tennessee Coal, Iron & Railroad Co., Ensley, Ala.; and "Unique Features in Southern Blast Furnace Practice," by George Ramsey, research department, Tennessee Coal, Iron & Railroad Co., Birmingham.

PLANNING FOURTH ANNUAL FORUM ON MACHINE TOOLS

Westinghouse Electric & Mfg. Co. will sponsor its fourth annual machine tool electrification forum in East Pittsburgh, April 18-20. Originated by the company in 1936, these meetings constitute an open forum for discussion of machine tool electrification problems and practices. Last year 84 machine tool representatives attended; this year over 100 are expected.

SCRAP INSTITUTE BROADENS WORK IN NORTH CAROLINA

Scrap iron and steel dealers of North Carolina will meet in Robert E. Lee hotel, Winston-Salem, N. C., afternoon of Feb. 26, to discuss broadening activity and scope of the North Carolina committee, Southern chapter, Institute of Scrap Iron and Steel Inc. Officers of this committee will be elected and committees set up to press actions designed in the interest of the state's dealers.

Joseph E. Jacobson, Luria Bros., Pittsburgh, president of the institute; Edwin C. Barringer, executive secretary, 11 West Forty-second street, New York; and Benjamin Schwartz, Schiavone-Bonomo Corp., New York, former executive secretary, will address the group.

FINANCIAL

CLEVELAND-CLIFFS PLAN FOR REFUNDING APPROVED

■ STOCKHOLDERS of Cleveland-Cliffs Iron Co., Cleveland, have approved a plan for refunding $13,230,000 of 4¾ per cent bonds. This provides for selling to five insurance companies $11,500,000 first mortgage and collateral trust 3½ per cent bonds dated Feb. 1, 1939 and due Feb. 1, 1951; and for selling to three banks $2,500,000 serial notes maturing $500,000 annually through Feb. 1, 1944. The notes are to carry interest at rates varying from 1½ per cent for first maturity to 2½ per cent for fifth maturity. The date for call of the old bonds has not yet been set.

JONES & LAUGHLIN HAS FOURTH QUARTER DEFICIT

Jones & Laughlin Steel Corp., Pittsburgh, reports a net loss of $1,129,856 for fourth quarter, compared with a loss of $1,773,591 in the same 1937 period and a deficit of $1,958,810 in the third quarter last year. In the 12 months ended Dec. 31 the company's net loss totaled $5,879,958 after all charges, against net profit of $4,788,799 in the preceding year, equal after dividend requirements on 587,139 shares of 7 per cent preferred stock to $1.18 a share on 576,320 shares of common.

INLAND STEEL EMPLOYES EXERCISE STOCK OPTION

Inland Steel Co. has reported to the New York stock exchange the exercise of options aggregating 1595 shares of capital stock by employes at $50 per share.

BALDWIN LOCOMOTIVE LOSS $1,032,641 FOR 1938

Baldwin Locomotive Works, including Midvale Co., reports consolidated net loss for 1938 of $1,032,641, against a net profit of $407,377, or 32 cents a common share in 1937. Midvale's 1938 consolidated net profit was $1,244,210, $6.22 a share, compared with $1,341,816, or $6.71 a share in 1937.

♦

M. A. Hanna Co. and subsidiaries reported net profit for 1938 of $799,507, equivalent, after preferred dividends, to 15 cents a share on common stock. Net profit in 1937 was $3,048,462 and in 1936 was $2,834,335.

♦

Valley Mould & Iron Co., Hubbard, O., reports net income for 1938 of $181,291, compared with 1937 net income of $710,158.

♦

Scullin Steel Co., St. Louis, had a profit of $129,803 for the year ended Dec. 31, after depreciation and federal taxes but before bond interest.

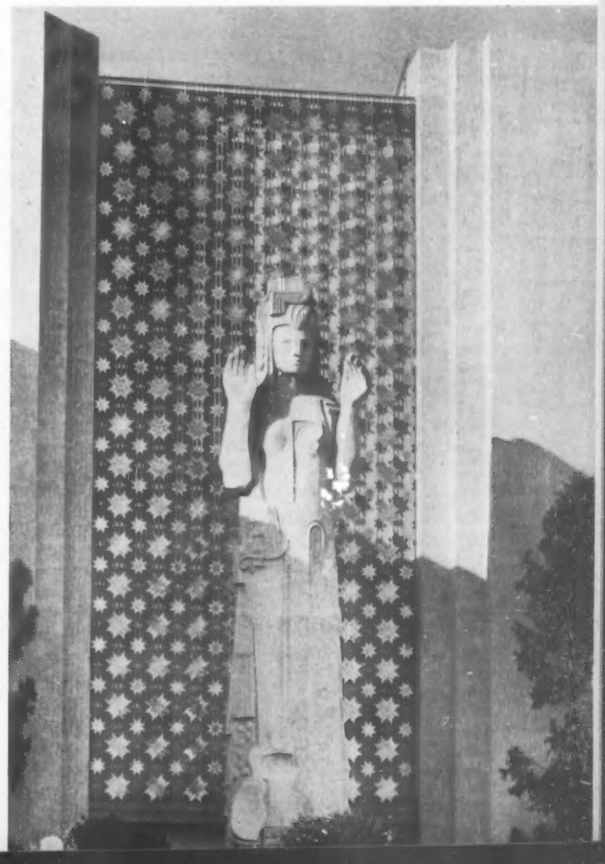
♦

Annual meeting of stockholders of United States Steel Corp. hereafter will be held at 10:30 a.m. the first Monday in April, instead of at noon, as heretofore. The meeting this year will be April 3.

♦

Pacifica's Musical Prayer Rug Stainless Steel

■ **Among attractions at the Golden Gate exposition which opened last week is this theme statue, Goddess of Pacifica, 80 feet high, standing before a "prayer rug," whose stainless steel spangles moved by air currents "give a musical tinkle and soft rustling." The idea for this spectacular feature, with its novel use of steel, is said to have originated in the fertile minds of the fair's publicity men**



MEN OF INDUSTRY

■ ROBERT C. STANLEY'S name will be placed in nomination as a director, United States Steel Corp., New York, at the annual meeting April 3, to succeed Walter S. Gifford, according to E. R. Stettinius Jr., chairman of the board. Mr. Gifford, a director since 1928, indicated to the board that for some time he had felt, in view of his other responsibilities, it would be inadvisable to stand for election for another three-year term.

Mr. Stanley, president, International Nickel Co., has been associated with the nickel industry since 1901. He began his career with International Nickel as a mining engineer, successively becoming general superintendent, first vice president and president.

♦

H. F. Gadd, president, Standard Pressed Steel Co., Jenkintown, Pa., sailed recently for Europe.

♦

F. E. Blackburn is now associated with the sales department of Ohio Ferro-Alloys Corp., Canton, O., as sales engineer.

♦

R. E. Christie, associated with Crucible Steel Co. of America many years, has been made assistant to R. E. Desvernine, president.

♦

Verne E. Minich, president, American Foundry Equipment Co., Mishawaka, Ind., sailed from New York Feb. 9 for a European trip.

♦

John W. Lohnes has been appointed assistant to general manager of sales, Vanadium Corp. of America, New York. The past three years Mr. Lohnes has been with the Chicago office of Vanadium corporation, prior to which he was with Carnegie-Illinois Steel Corp. in Chicago. His headquarters will be in New York.

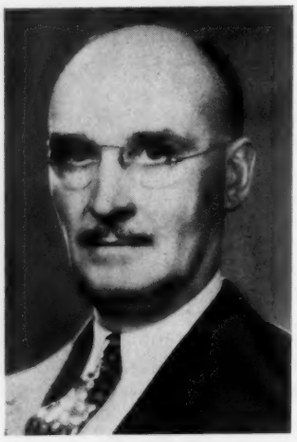
♦

C. L. Costello, vice president, Stewart Iron Works Co. Inc., Covington, Ky., has been elected president, succeeding Robert S. Stewart, who has become chairman of the board. C. T. Stewart has been elected a vice president, succeeding Mr. Costello. Officers re-elected are: W. S. Rich, secretary; C. A. Aplin, treasurer, and Stanley M. Stewart, assistant secretary.

♦

M. D. Harrison, secretary and treasurer, United Specialties Co., Detroit, has been elected president, succeeding Christian Girl, resigned. John T. Beatty and Ernest K. Williams have been elected vice presidents; George Brill, secretary; and A. Vander Meulen, treasurer.

Robert C. Stanley



R. E. Christie

John W. Lohnes

♦

R. C. Purdy, 13515 Lake Shore boulevard, Cleveland, has been appointed manufacturer's sales agent to handle industrial lighting fixtures manufactured by Goodrich Electric Co., Chicago.

♦

Donald G. Sherwin, vice president, Caterpillar Tractor Co., Peoria, Ill., has been elected a director, to succeed the late C. Parker Holt.

♦

M. H. Jewett, room 301, Union building, Cleveland, has been appointed district sales representative in the northern Ohio territory by American Flexible Coupling Co., Erie, Pa.

♦

Erling Winsnes, since 1930 manager of the Santiago, Chile, branch office of Allis-Chalmers Mfg. Co., Milwaukee, has been appointed general South American manager, with headquarters at Buenos Aires.

♦

V. A. Sheals, for more than 15 years a member of the cable section of General Electric Co.'s central station department, has been named assistant designing engineer, cable engineering department.

♦

C. M. Eason has been elected president, Industrial Clutch Co., Waukesha, Wis. Other newly elected officers include: E. R. Estberg, treasurer, and John J. Pfeffer, secretary.

♦

D. Robert Coutts, identified with the chain industry more than 20 years, has become associated with International Chain & Mfg. Co., York, Pa., as western sales manager, 2109 South Wabash avenue, Chicago.

♦

Roscoe Seybold, associated with Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., since graduation as an electrical engineer from Purdue university in 1907, and vice president and comptroller since 1934, has been elected a director.

♦

George W. Walker, New Center building, Detroit, has been retained as industrial styling consultant by the Dura Co., Toledo, O., subsidiary of Detroit Harvester Co., and supplier of automotive hardware and related products.

♦

Harvey C. Hamilton, Cleveland, formerly with Lake Ports Shipping Co., has been appointed commercial representative for Oglebay, Norton & Co., and Saginaw Dock & Terminal Co., whose boats handle steel, pig iron, scrap metal and miscellaneous bulk commodities.

♦

Robert Gregg, president, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has been appointed by Governor Dixon as one of three members of the new state docks advisory board for management of state wharves at Mobile.

♦

Henry S. Beal has become associated with Heald Machine Co.,

Worcester, Mass., as general manager. Mr. Beal was manager of Jones & Lamson Machine Co., Springfield, Vt., and served the National Machine Tool Builders' association as president. More recently he has been president, Sullivan Machinery Corp., Chicago.

♦

C. H. Beckwith, for 19 years special representative for Crane Co., Chicago, has become associated with Pittsburgh Piping & Equipment Co., Pittsburgh, as district manager in Chicago territory. He will have offices in the Peoples Gas building, Chicago, and the General Motors building, Detroit.

♦

Gordon Fox recently sailed for Holland in connection with services being rendered by Freyn Engineering Co., Chicago, to the Royal Dutch Blast Furnace & Steel Works at Ymuiden, which owns three Freyn-design blast furnaces, and is now adding open-hearth and rolling mill departments.

♦

Albert E. Hackett, ten years district manager at Detroit for Thomson-Gibb Electric Welding Co., and

Albert E. Hackett

prior to that associated with Federal Machine & Welder Co. and Taylor-Winfield Corp. in the Detroit area, has joined Progressive Welder Co., Detroit, in an executive sales and engineering capacity.

♦

Robert W. Wolcott was re-elected president, Lukens Steel Co., Coatesville, Pa., at the annual meeting of stockholders, Feb. 14. Other officers re-elected include: First vice president, Charles L. Huston; vice president in charge of sales, F. H. Gordon; vice president, D. S. Wolcott; secretary, Stewart Huston; treasurer and assistant secretary, J. W. Herman. S. H. Hofmann was elected assistant treasurer.

In addition to Messrs. Wolcott, Huston, Charles F. H. Miller, W. Findlay Downs, Carl Fenninger,

C. H. Beckwith

and T. E. Quisenberry, the following new directors were elected: Charles L. Huston Jr., Norman R. Entrekin, W. Perry Tyson, John E. McCauley and Samuel L. Shober Jr.

♦

E. O. Behne, formerly identified with the Defiance Machine Works, Defiance, O., has joined Reed-Prentice Corp., Worcester, Mass., as chief engineer in charge of engineering and development. A. F. Schoepflin, formerly with Doehler Die Casting Co. for 30 years, is now employed by Reed-Prentice as consulting engineer.

♦

Paul N. Anderson has been re-elected president, Dahlstrom Metallic Door Co., Jamestown, N. Y. Clay F. Emerson has been chosen vice president; Gustaf E. Johnson, secretary and treasurer; J. Gustaf Sundin, assistant treasurer; Axel G. Dawson, general superintendent; and Carl T. Bergstrom, purchasing agent.

♦

C. H. Saiter has been appointed sales manager, heavy crane division, Cleveland Crane & Engineering Co., with headquarters at Wickliffe, O. He was with Morgan Engineering Co. ten years before going to Cleveland Crane & Engineering in 1922. Mr. Saiter served as assistant chief engineer for a number of years prior

C. H. Saiter

to becoming manager of the Pittsburgh district in 1931, and for the present will continue to supervise the Pittsburgh district in addition to his new duties. He is an associate member, Association of Iron and Steel Engineers.

H. T. Florence, heretofore sales manager, has become general manager.

♦

William D. Thomas, who recently resigned as president and general manager, Sandvik Steel Inc., American representative of the Sandvik Steel Works, Sandvik, Sweden, will become distributor of cold-rolled razor blade steel for the Stanley Works, steel division, Bridgeport, Conn., March 1, with headquarters in the Chrysler building, New York.

DIED:

■ WILLIAM F. HOBBS, 86, chairman, Bridgeport Hardware Mfg. Corp., Bridgeport, Conn., in that city, Feb. 11. In 1880 he joined his father-in-law in the purchase of American Belt, Tin & Tool Co., which in 1884 was incorporated as the Wilmot & Hobbs Mfg. Co. In 1895 he organized the Bridgeport Mfg. Co. and later incorporated the Bridgeport Hardware Mfg. Co.

♦

Ernest L. Clifford, 56, district sales manager at Detroit for Babcock & Wilcox Co., Feb. 8 in that city.

♦

Douglas McCracken, 70, vice president, Walter Machine & Screw Co., Detroit, in that city, Feb. 14.

♦

Carl F. Lomb, vice president, Bausch & Lomb Optical Co., Rochester, N. Y., recently in that city.

♦

Frank X. Finkl, 57, Feb. 7 in Chicago. He was a member of A. Finkl & Son, manufacturers of steel forgings.

♦

George Goebel, 58, chief engineer, Crown Cork & Seal Co., Baltimore, in Baltimore, Feb. 4. Prior to joining the company 25 years ago he was active in the automotive industry.

♦

Arne T. Nelson, 60, assistant superintendent of Ford Motor Co.'s glass plant, Detroit, and a designer long active in the automotive industry, Feb. 6.

♦

Corliss E. Sullivan, 62, chairman of the board, Central National bank, and president, Cleveland Clearing House association, Cleveland, in that city, Feb. 14. He was a director, Republic Steel Corp., B. F. Goodrich Co., Pioneer Steamship Co., Cleveland Graphite Bronze Co., and Standard Products Co.

A STRONG ARGUMENT

for the use of WORTH SHEARED STEEL PLATE is that each plate is uniform, metallurgically and physically . . . your plate, under complete control from ingot to finished material, goes to you only after rigid inspection that passes nothing but perfection.

You'll find IT PAYS TO SPECIFY WORTH!

AT CLAYMONT, DEL.

WORTH STEEL COMPANY

WORTH

NEW YORK, N. Y.
Wm. C. Dickey

PITTSBURGH, PA.
McKee-Oliver, Inc.

ST. LOUIS, MO.
Hubbell & Sharp

HOUSTON, TEXAS
The Corbett-Wallace Corp.

SEATTLE, WASH.
National Steel Sales, Inc.

PORTLAND, OREGON
National Steel Sales, Inc.

SAN FRANCISCO, CALIF.
W. S. Hanford

CLEVELAND, OHIO
E. F. Bond

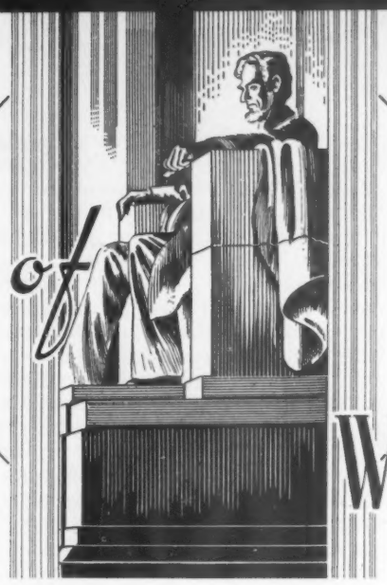
DETROIT, MICH.
H. L. Sevin

LOS ANGELES, CALIF.
Ducommun Metals & Supply Co.

BOSTON, MASS.
H. J. Linn Co.

MONTREAL & TORONTO, CAN.
Drummond, McCall & Co., Ltd.

Windows of WASHINGTON



By L. M. LAMM
Washington Editor, STEEL

WASHINGTON

■ NATIONAL defense legislation now in the congressional mill has an inescapable interest to the metalworking and metal producing industries.

Last week the house by an overwhelming vote approved and sent to the senate the administration's emergency defense bill authorizing a $300,000,000 army air corps expansion by construction of at least 3000 military planes. Bill also authorized $23,750,000 expenditure for bolstering Panama canal defenses, and $34,000,000 for educational orders to acquaint private industry with mass production technique in war materials.

Senator Thomas, Utah, chairman, senate military affairs subcommittee, reported favorably on his bill for the acquisition of stocks of so-called strategic and critical raw materials.

Asks $25,000,000 Appropriation

The Thomas bill provides for the acquisition by the army and the navy of certain stockpiles of strategic metals and critical materials and provides for an appropriation of $25,000,000 annually for four years. While specific metals and materials are not mentioned in the bill, the war department has listed as strategic metals manganese, tin, tungsten, nickel, chromium, aluminum, and antimony. Among so-called critical materials of interest to the steel industry the war department has mentioned are fluorspar, graphite, magnesium, palm oil, vanadium, and molybdenum.

Thomas' bill also provides an appropriation of $500,000 a year for four years to be used by the secretary of the interior through the bureau of mines and the geological survey for scientific research and investigation of the treatment and utilization of various ores.

The house military affairs committee will hold hearings starting Feb. 21 on the strategic metals and materials bills which have been referred to it. Several of these bills are pending in the house and all are essentially similar. They are also much like the senate bill.

SMALL EASTERN PRODUCERS CARRY CASE TO TNEC

Robert B. Thomas, representing small eastern steel producers, has written Leon Henderson, executive secretary, temporary national economic committee, asking if the committee can look into the new steel wages as ordered by the secretary of labor effective March 1 under the Walsh-Healey act, and if the committee can "suggest a means whereby the competition of the small eastern producers of iron and steel products may be fostered rather than eliminated."

It is understood officials of the economic committee feel they can not go into this matter now because the action was taken by a cabinet officer.

The appeal of the small eastern steel producers is based on an assertion that if the new determinations go into effect March 1 as scheduled, an eastern steel monopoly would be created and many small companies forced out of business.

The new minimum rates call for a basic wage of 62½ cents an hour on all government contract work undertaken by the industry in 13 eastern and northern states. Such an increase, the small producers pointed out, would force them to retire from competition and give the three or four major companies a virtual monopoly in the East.

More than 44 independent producers, now employing more than 25,000 workers and representing a capital investment of nearly $100,000,000, will be affected.

Exemption for the small companies would be ineffective, Thomas pointed out, because independent producers are forced to seek workers in the same labor market as the big companies and if the latter adopt the increase the small companies will be forced to do likewise regardless of possible exemptions.

Similarly, he said, adoption of the raise on government contract business would necessarily bring out the same raise in the general base rate on private business because plants are so operated that it would be impossible to differentiate between workers employed on government contract work and those employed on private work. Government contract jobs now constitute about 10 per cent of most of the small companies' business.

"It (the raise) will mean severe hardship to all, and perhaps, disaster to many," Thomas declared. "The real effect of the change will be to force the work into the hands of the large dominant companies. I am writing to you in the hope that the temporary national economic committee may see fit to look into the matter and suggest a means whereby the competition of the small eastern producers of iron and steel products may be fostered rather than eliminated."

DR. DYE RESIGNS FOREIGN, DOMESTIC COMMERCE POST

Dr. Alexander V. Dye, director, bureau of foreign and domestic commerce, has resigned. Dr. Dye before he became director of the bureau some three years ago was in the foreign service of the bureau and it is anticipated that he will return to it as a commercial attache.

Much interest attached to Dr. Dye's appointment as director because this was the first time any foreign service officer had ever been made a director. It was felt the action "pepped up" the foreign service officers of the department considerably.

The foreign service work of the bureau has always been considered more important than domestic commerce. This was due in part to the fact that years ago the foreign service officers were in the nature of "salesmen" for American in-

dustry and specially for those small American exporters who were unable financially to keep representatives abroad.

Dr. Dye's successor has not been appointed, but it is understood Secretary of Commerce Hopkins is anxious to get a businessman to handle this job. He has enlisted the efforts of the members of business advisory council.

URGES RESTRICTIONS OF R. R. MOTOR TRUCK LINES

American Trucking Associations Inc. last week urged the house interstate commerce committee to restrict railroad operation of motor truck lines.

Represented before the committee by J. Ninian Beall, the trucking association took the position it would not be "in the public interest to have the same transportation agency conducting more than one type of transportation, thereby duplicating its facilities, competing with itself, and further increasing the amount of transportation facilities which the public is expected to support."

BILL TO CURTAIL "WASTEFUL" RAILROAD SPENDING

First of a series of bills was proposed last week by Senator Wheeler, Montana, dealing with the railroads. Further bills will be introduced in both houses to "legislate the railroads out of their difficulties."

Said Senator Wheeler:

"The chief purpose of this bill is to prevent the unnecessary and wastefull spending of railroad funds for the purchase of stocks or properties which are not needed for the legitimate operation of the railroad itself. Such spending has been a serious abuse in the past. . . . Between 1924 and 1931 most of the large eastern railroad systems engaged in this practice, and the resulting losses will probably amount to over a quarter of a billion dollars. Several of the southwestern railroads now in bankruptcy have also sustained serious losses from unwise and unnecessary speculation.

"There is no sense in allowing this drain on the railroads to occur in the future. Under this bill, the commission is empowered to prevent such spending. I believe that these new powers may help to prevent the recurrence of railroad failures in the future."

CIO BATTLES PROPOSAL TO AMEND WAGNER ACT

Committee for Industrial Organization has launched a nation-wide campaign to defeat amendments to the national labor relations act proposed by the AFL and which were incorporated in a bill introduced by Senator Walsh, Massachusetts.

The CIO charges the Green proposals go far beyond anything authorized by the Houston convention of the AFL. It is contended by the CIO that the Walsh bill will break down the present protection afforded to workers against company unions; will divide workers in every plant into large numbers of craft groups which must deal separately with the employer; bring the courts into the administration of the law at many points, and open the files of the board and the unions themselves to examination by employers; and finally grant many privileges to employers to the disadvantage of the unions.

WALSH-HEALEY IRON, STEEL PURCHASES TOTAL $306,483

During the week ended Feb. 11, the government purchased $306,482.84 worth of iron, steel and their products under the Walsh-Healey act: The Kaul Clay Mfg. Co., Toronto, O., $11,297.20; Bethlehem Steel Co., Bethlehem, Pa., $71,230.47; Alan Wood Steel Co., Conshohocken, Pa., $70,676.45; American Rolling Mill Co., Middletown, O., $11,833.12; Vulcan Rail & Construction Co., Maspeth, N. Y., $11.740; Capitol Steel & Iron Co., Oklahoma City, Okla., $15,907.70; Pacific Iron & Steel Co., Los Angeles, $12,695; Steel & Alloy Tank Co., Newark, N. J., $31,064; The McKay Co., Pittsburgh, $22,830.29; Baldt Anchor, Chain & Forge Corp., Chester, Pa., $10,434.95; American Chain & Cable Co. Inc., Bridgeport, Conn., $18,749.74; and The Jeffrey Mfg. Co., Columbus, O., $18,023.92.

NAM DIVIDES DEPRESSION BLAME THREE WAYS

Government, industry and labor must share blame for policies which retarded recovery in the years 1932-37 and led to the depression of 1937-38, says the National Association of Manufacturers in a report comprising the first large scale group study of depression problems.

These policies must be avoided if prosperity is to be regained, the association contends. A second portion of the report will be issued soon listing conditions necessary for sustained prosperity once recovery is achieved.

Report represents the findings of an 18-month study by a group of 52 business leaders and economists.

While dwelling heavily on government responsibility for retarding recovery and for the precipitous business decline of 1937-38, the report also singles out business and labor policies which have been contributing factors.

Business policies which contribute to depression listed:

Mistaken inventory policies on the part of some industries.

Unwise consumer credit policies.

Failure to improve financial structure by reducing fixed charges, avoiding overcapitalization or financing with borrowed capital beyond ability to pay.

Too ready acceptance of apparent effects of government spending policies, and making business calculations thereon; in many instances, moreover, business deliberately sought government financial aid.

Failure in many instances to develop satisfactory labor relationships based on mutual respect and co-operation; failure in many instances where company policies were sound to convince workers that this was the case.

Failure of business to sell itself to the public, with explanation of its practices, obligations, and contributions to national improvement.

LA FOLLETTE REPORT HITS REPUBLIC MANAGEMENT

Senators La Follette, Wisconsin, and Thomas, Utah, of civil liberties committee, last week sounded off on private police systems.

Their report criticized T. M. Girdler, chairman, Republic Steel Corp., and the Republic management for permitting its private police to attempt to break up union organization work "through violence and espionage."

It is expected that there will be another report soon on industrial espionage.

The La Follette commitee makes the following recommendations:

"The functions of private police systems must be restricted to the protection of plant and property. . . .

"In recommending legislation to correct the evils of company police systems the committee is scrupulous not to interfere with the right of the employer to police his premises or employ persons for the legitimate functions of protection. . . .

"Legislative remedies, in the opinion of the committee, should be aimed to prohibit the practice of labor espionage and the shadowing, coercion, and intimidation of workers . . . and to restrict company police to company property during times of strike."

STEEL HEARINGS TO START DURING WEEK OF FEB. 27

Steel case which is to be presented to the national economic committee by the federal trade commission will be heard during the week of Feb. 27. It was originally intended to begin the steel hearings on Feb. 24.

The trade commission is still uncertain how it will present the case. This will either be through its economists only, or through men of the industry or a combination of both.

Hot Dip Galvanizers Cite Group's Growth; Study Technical Problems

■ AMERICAN Hot Dip Galvanizers association held its fourth annual meeting at Hotel Roosevelt, New York, Feb. 14-15 to discuss technical and other problems and formulate plans for the current year.

At the directors' meeting, I. M. Herrmann, Acme Galvanizing Inc., Milwaukee, was elected president; A. J. Blaeser, Joslyn Mfg. & Supply Co., Chicago, first vice president; F. P. Auxer, National Telephone Supply Co., Cleveland, second vice president; and Stuart J. Swennsen, secretary and treasurer. Wallace G. Imhoff is retained as technical director.

In addition to the officers, the new board includes: T. M. Gregory, Hanlon-Gregory Galvanizing Co., Pittsburgh; F. M. Carlson, American Tinning & Galvanizing Co., Erie, Pa.; W. J. Gregory, Thomas Gregory Galvanizing Works, Maspeth, N. Y., and Phelps Ingersoll, Wilcox, Crittenden & Co. Inc., Middletown, Conn.

Mr. Swennsen told the association about the progress it has made in the comparatively short length of time it has been in existence. Organized about three years ago, it has become known throughout the United States, as well as Europe, Asia, Africa, Mexico and South America. He attributed this to its advertising and distribution of literature.

Finds Advertising Effective

"The trade, in general," he said, "not only knows of the existence of this association but is calling upon its facilities constantly for assistance and information relating to the hot dip galvanizing process."

Members of the association also are using these facilities for solving technical and practical problems. At the end of 1938, the association had 28 regular members, two associate members and two contributing members. Association members account for approximately 90 per cent of the industry's capacity.

In discussing advertising plans for 1939, Mr. Swennsen said the program so far has shown very tangible results, in requests for literature and individual inquiries for information, proving that the advertisements are being read and used as a means to learn more about hot dip galvanizing.

During the past year the association added two standard specifications covering steel window sash and steel highway sign supports, making a total of 18 such standard specifications. Only recently, the bureau of standards, department of commerce, Washington, in its certification and labeling plan, recognized the association, its insignia and labeling specifications as the official organization of the industry.

At the technical session, Mr. Carlson discussed "Embrittlement of Malleable Iron Due to Galvanizing." "That the embrittlement of malleable iron does occur in the process of galvanizing is well established, but it is also well established that this is due almost entirely to the heat treatment incidental thereto, rather than any specific effect of the molten zinc itself," he stated.

Eliminates Embrittlement

Mr. Carlson added that there seems to be a clearly defined range in which the malleable iron exhibited a maximum embrittlement. This range varied considerably in different kinds of malleable iron but the mean temperature appeared to be about 860 degrees Fahr. On either side of the embrittlement zone it was found the iron exhibited a good impact resistance, and treatment in either of these regions suggested itself for the role of benefactor to the metal.

Efforts to improve the iron by heating in the low temperature zone met with meager success. Similar experiments then were tried in the high temperature side of the embrittlement zone. A specimen was given the embrittlement treatment and reheated to 1140 degrees Fahr. and again quenched. The impact value of the resulting metal was 11.1 foot pounds or 154 per cent of the untreated iron, thus showing that the effect of the embrittlement treatment had been entirely eliminated.

D. M. Hayes, Wilcox, Crittenden & Co., Middletown, Conn., in discussing "Hot Dip Galvanizing by the Centrifugal Process," declared that there still is a great deal of room for improvement in the process although it has been in use for a number of years.

Mr. Hayes said that his company's customers are becoming more and more particular about the appearance of their products and, not only demand rust-proofing but appearance comparable to that of cadmium or other electro-plates. His company has conducted considerable experimental work in improving finishes, including quenching in cold and hot water, oil, etc. It has been found, however, that poor finishes usually are due to spinning the work a little too long, often only a few seconds. There is no set rule on time, he said, as it depends upon the type of work being processed.

"It is surprising how accurately a good centrifugal machine operator can time the different kinds of work correctly," he said.

Mr. Herrmann discussed "Proper Fire Insurance for the Galvanizing Industry." He said that too often a company is over-covered on some types of insurance and is not sufficiently covered on others. As an example, he stated that in some instances policies have been technically voided by the storage of combustible materials in the same building by another tenant.

Mr. Herrmann offered the following formula for proper insurance purchasing: "Pick the agent who is to make the analysis. Choose him as you would your lawyer or your doctor—on professional ability and not sociability. Find out what system or plan of analysis he intends to use. The work cannot be done haphazardly and be effective. Make sure that the agent does not attempt to analyze your policies without complete information as to your risk. In doing so you will pave the way for smooth adjustment of losses if and when they occur. The analysis makes it possible to adjust the loss before the loss occurs."

Mr. Imhoff dicussed engineering problems. In his opinion, the ideal bath temperature range is 800 to 880 degrees Fahr., foundation temperature 600 to 700 degrees and side wall temperature not over 1200 degrees. Pot destruction starts from the inside at about 900 degrees, he said.

Advises Automatic Control

Mr. Imhoff pointed out that lack of uniformity of pot design made it difficult to effect proper bath temperature. "To often," he said, "galvanizers use pots which are too small for the amount of work being processed." Also side wall thickness should have a definite relationship to the capacity of the pot. He then emphasized the point that heating area around the pot should be in proportion to the area to be heated.

Mr. Imhoff advocated the use of automatic temperature control instruments since hand-firing is too uncertain. In discussing the subject further, he said that radiated heat tended to prevent hot spots since the flame cannot come into direct contact with the pot. He also advised the use of a relatively large number of burners since this permitted more even heat distribution and makes it possible to more closely control the amount of heat in relationship to the quantity of work being processed.

MULTIPLY BY 10

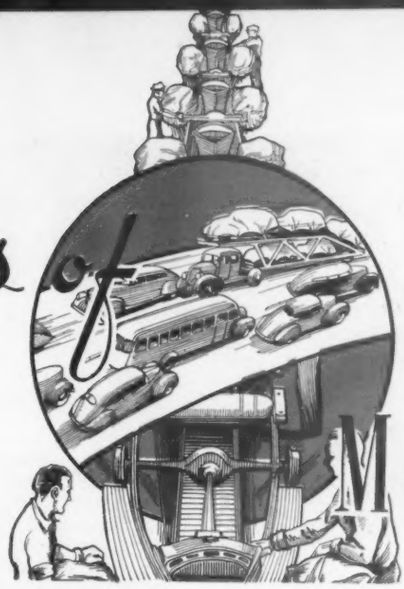
THE 410 HYATTS ON THIS COOLING BED

...And Your Answer is Still Short, by Several Hundred, the Total Number of Hyatts on Which the Table Rollers in this Mill Operate!

• 4,770 easy-going Hyatt Roller Bearings are used by Carnegie-Illinois Steel in the new 100″ Plate Mill at Homestead. In this mill, and the many others Hyatts serve, there is assurance of smooth, uninterrupted bearing performance at all times. Under heavy loads and the toughest going Hyatt design helps save power, lubricant and maintenance. These advantages on all types of steel mill equipment . . . advantages that lengthen the life of every vital bearing position under their protection . . . are Hyatt Roller Bearing's contribution to more tonnage at less cost. Specify Hyatts and be sure. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J., San Francisco. Hyatt Roller Bearing Sales Company, Chicago and Pittsburgh.

HYATT *Roller* BEARINGS

Mirrors of MOTORDOM



By A. H. ALLEN
Detroit Editor, STEEL

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DETROIT

■ ANNOUNCEMENT by automobile manufacturers that the 1939 auto show in New York will be held the week of Oct. 15, three weeks earlier than last year, indicates advantages of early introduction of new models this year outweigh the discomforts which fall announcements bring to dealers.

A recent poll of the nation's retail outlets for cars showed 69 per cent favored return to January shows, 11 per cent preferred Dec. 1 or later, 18 per cent were satisfied with the present arrangement, and 2 per cent had other ideas.

Strain on financial resources caused by the winter used car burden, inability to buy or trade in used cars at prices low enough to permit holding them from 90 to 120 days, too many fall sales to "annual style buyers" with consequent stiff depreciation in one-year-old cars, serious losses occasioned by sacrifice sales of used cars during the winter, and the expense of warehousing and maintaining used car inventories are some of the reasons advanced by dealers for preferring a return to January shows.

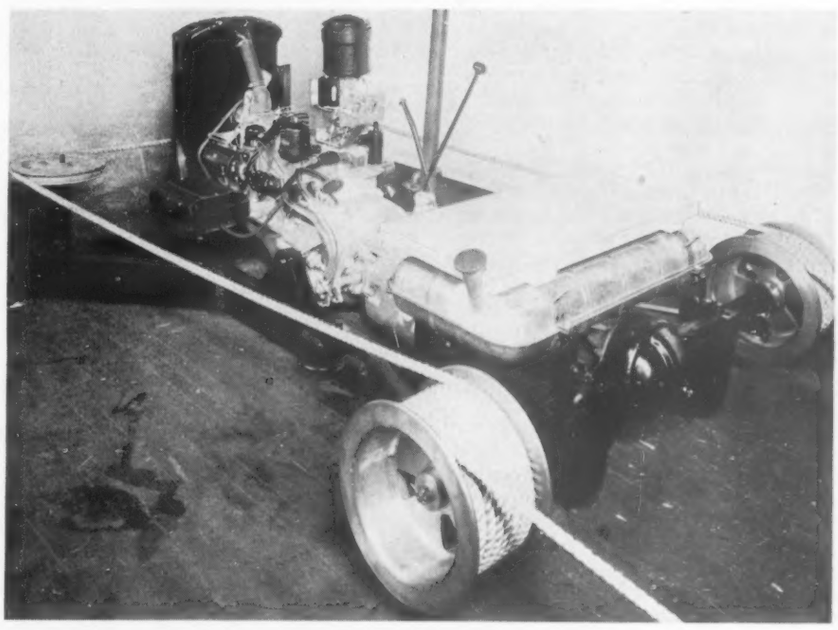
Fairs Influence Decision

However, at least for this year, with fairs in progress at both New York and San Francisco calling for heavy investments in exhibits by motor manufacturers, an early introduction of new models is only sound business judgment.

So the pressure has been turned on a number of new model programs and it is likely that as early as July 15 at least one or two 1940 creations will be rolled into fair grounds for display. Actually the dating of the 1940 New York show three weeks earlier means little as far as Detroit is concerned, since even last year Chrysler, for example, displayed all its new models Aug. 19, nearly three months in advance of the eastern show.

To captivate the millions of visitors expected at the fairs will be a number of additions to this year's line of passenger cars, as already mentioned in previous issues of this department. Packard and Studebaker will have new light sixes. Hupp will probably be showing its little Skylark six. Don't be surprised if Crosley has his "jitterbug" ready by late summer. This project still is lukewarm, inquiries having been received by various manufacturers in recent weeks for such items as speedometers, gas tanks and other miscellaneous parts. In spite of the fact Powel Crosley Jr. is reported to have stated as recently as the first of the year that he was shelving the proposition because he could use the $650,000 investment required for the car more profitably in de-

Chrysler Engine Adapted to Ski "Lift"



■ Using a standard Chrysler industrial engine, heavy-duty transmission and rear axle mounted on a subframe, with supplementary cast steel drums and pulleys as shown, this novel ski "lift" has been developed by Chrysler's industrial engine division, Detroit. A centrifugal governor maintains constant rope speed, although it may be varied up to 12 miles per hour by shifting the transmission gears. In principle, the lift drives the endless rope which may be grasped by the ski or toboggan enthusiast at the foot of the slide, giving him effortless transportation to the top

veloping new radio models, the project is definitely alive in some quarters.

Nash has resumed activity in its light 4-cylinder car which will retail for around $600. Layouts of equipment and parts are being considered in Kenosha at the moment, and it is reported a number of engines have been assembled.

Incidentally, the possibility of Nash moving operations into Detroit has lessened since the election of Heil as Wisconsin governor. For a time it appeared the company definitely was headed this way, with an option on the Ford Highland Park plant, and even a palatial residence leased in Grosse Pointe for C. W. Nash, chairman of the board.

Recent events, however, indicate the shift will not be forthcoming, at least for a while. Some purchasing activity has been transferred back to Kenosha; Mr. Nash is reported to be in process of liquidating some of his holdings; C. H. Bliss, vice president in charge of sales, has resigned, and work on the new 4-cylinder model is being centered at Kenosha.

Should the drift of public favor move in the direction of these small, low-priced cars, and many are confident this market has not been explored fully, then it is practically a certainty the "big three" of motordom will rush through their versions of such models. Chrysler is rumored to be giving consideration to a car in this bracket, but of course this report has been a hardy perennial for a good many years. Ford was on the verge of invading the "five and ten" car field last year, but held back as sales were nosediving. General Motors is understood to have a nominee ready when the time is propitious.

■ STEEL buy which Ford was preparing to release last week to cover April production or around 90,000 cars has been scaled down about 20 per cent, being balanced off against a float of steel placed last year for around 100,000 jobs. While the float has been pared down appreciably in the last two months, the new buy for April, expected this week, will be for around 70,000 cars. Another good-size tonnage probably will be placed in ten days or so to cover May production. Inasmuch as May output generally is one of the peaks of the year, and in view of the fact the Ford steel float will have been pretty well used up by that time, steel interests are looking for some important tonnage to come out of the Rouge plant in the next few weeks. Meanwhile the Ford steel plant continues to operate at virtual capacity, with nine furnaces melting.

Finishing touches were made to the new melt shop of Rotary Electric Steel Co. here the first of the month when a 50-ton electric furnace was moved into the new shop from an adjacent building and placed in operation. Supplementing this unit is a new 30-ton electric melting furnace with expanded-top construction to permit handling a greater bulk of cold scrap. The new shop, shortly to be described in detail in STEEL, now has capacity for 12,000 tons of steel per month, which nicely balances finishing capacity.

Rotary Electric Steel, once considered to be set in the wilds of the outlying northeast section of greater Detroit, is now in the vortex of a bustling industrial center, flanked as it is by the large new Dodge truck plant and the new molding and plumbing ware plant of Briggs Mfg. Co. It is estimated upwards of 10,000 workmen are now concentrated in this area, and the result has not been entirely a happy one as far as Rotary's steelworkers are concerned. Exposed to the radical and militant ideas of the UAW auto workers in nearby plants, the steelworkers have suggested to the management that "it would be nice" if they could receive time and a half for all overtime work, a bonus for night work and other concessions granted some auto workers.

Another new industrial building in this Ferndale area is the warehouse and office of Allegheny-Ludlum Steel Co., occupied since Feb. 1, but still not officially housewarmed. Offices are the last word in spaciousness and light while a roomy warehouse in the rear provides facilities for stocking and preparing for shipment one of the largest volumes of carbon and alloy steels carried in this area. Both horizontal and vertical steel racks are provided, the former for the heavier sizes up to 10 feet in length, and the latter for vertical storing of smaller and longer varieties such as drill rod and the like. The vertical racks are dividend ino compartments with studs at top, center and bottom, and one rack, for example will accommodate 60 tons of ¾-inch rounds.

New office and plant of Carboloy Co. likewise is being groomed for early occupancy and is located in the same general vicinity, just north of the city limits. A few weeks should see transfer of the company's present facilities on East Jefferson avenue to the new location.

■ WHAT looks to be a promising new outlet for flat-rolled steel is a new type of electric-steam radiator for use in localities where no central heating systems are available. The unit, in appearance, resembles the standard steam radiator, with segments comprising two 20-gage pressed steel halves, welded back to back and then seam welded around mating faces to be pressure tight. Stamped legs of 16-gage steel are attached at the four corners. An electric heating element is inserted horizontally through the base and the unit is charged with two quarts of water. The water is vaporized by the heating element and the steam passes through the multiple segments which radiate the conducted heat from the steam. By regulating the electric current, control of the heating effect is possible. The units are bonderized inside and out and finished in attractive crinkle-finish lacquers. Plans are now being drawn up for their manufacture by a local fabricator.

Exports of automotive products from this country during 1938 had a valuation of $282,813,952, according to department of commerce figures.

■ In Mirrors of Motordom, Jan. 30 issue, concerning a building project being proposed for Toledo Scale Co., Toledo, O., it was stated that eventually space would be provided for "manufacture of plastic moldings." H. D. Bennett, president of Toledo Scale Co., writes that the company has no thought of fabricating finished moldings "from our own or any other plastic material." STEEL regrets this error and is glad to make the position of the company clear with respect to its subsidiary, Plaskon Inc., supplier of plastic molding material.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

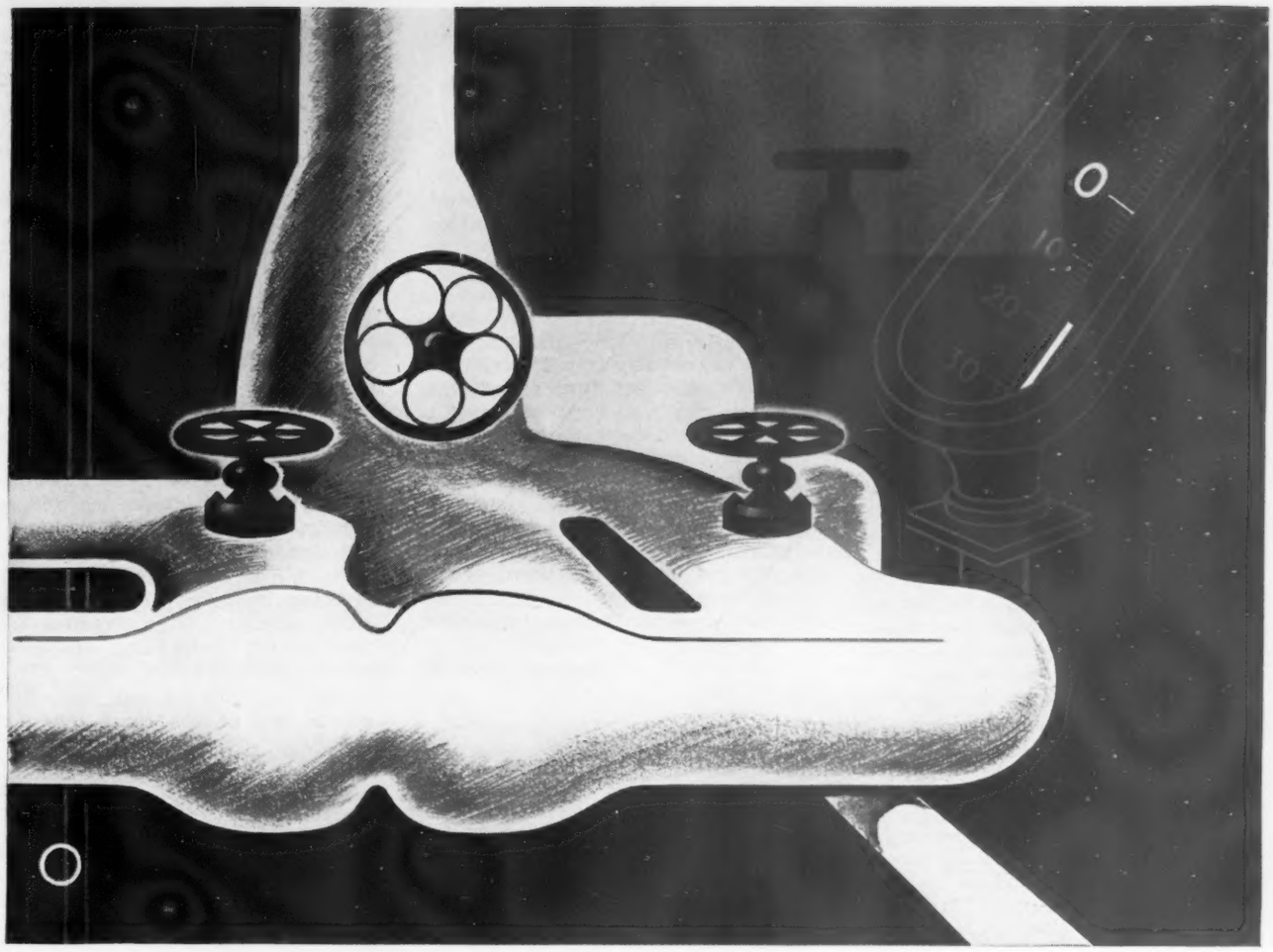
	1936	1937	1938
Jan.	377,244	399,186	227,130
Feb.	300,810	383,900	202,589
March	438,943	519,022	238,598
April	527,625	553,231	238,133
May	480,518	540,377	210,183
June	469,368	521,153	189,399
July	451,206	456,909	150,444
Aug.	275,934	405,072	96,936
Sept.	139,820	175,630	89,623
Oct.	230,049	337,979	215,296
Nov.	405,799	376,629	390,350
Dec.	518,958	347,349	407,016
Year	4,616,274	5,016,437	2,655,777

Estimated by *Ward's Reports*

Week ended:	1939	1938†
Jan. 21	90,205	65,418
Jan. 28	89,200	59,365
Feb. 4	79,410	51,443
Feb. 11	84,500	57,810
Feb. 18	79,860	59,100

†Comparable week.

	Week Ended	
	Feb. 18	Feb. 11
General Motors	34,715	34,065
Chrysler	19,745	20,645
Ford	16,600	21,750
All others	8,800	8,040



OUT OF DATE—OUT OF POCKET

... may be literally true unless your material specifications include Molybdenum steels. Present production problems and costs demand these improved materials. Here is one of Moly steel's many successes.

A manufacturer of a large line of valves for operation at sub-zero temperatures required a steel having good impact properties at temperatures down to 150 degrees below zero F. Many different parts were involved.

Chrome-Molybdenum (SAE 4140) steel is standard in this case because of its established ability to meet strict low temperature impact specifications.

In addition this Chrome-Moly steel is keeping material and production costs within competitive limits. It is yielding the additional profit that always comes from standardization. Substantial fabrication economies are also being obtained.

Our technical books "Molybdenum in Steel" and "Molybdenum in Cast Iron" which contain a great deal of practical data are free to any interested production executive or engineer on request.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

Climax Mo-lyb-den-um Company
500 Fifth Avenue · New York City

MOLY

Warns Californians Solvent Industry Necessary To Increase U. S. Income

■ DEFICIT financing, "strangest phenomenon in this entire epoch of wonderland economics," now must be "viewed as a permanent fiscal policy," declared Paul F. Cadman, president, American Research foundation, before the 250 delegates to the fifteenth annual conference, Iron, Steel and Allied Industries of California, at Del Monte, Feb. 9-11.

Dr. Cadman condemned the deficit financing policy and warned its continued practice is "approaching the point where it actually destroys both the incentive to save and the actual savings."

Analyzing administration predictions for a future eighty billion dollar nation, Dr. Cadman pointed out: "National income, in the last analysis, is the result of real wealth actually produced, a portion of which is saved. Granted, the forms of production are many and varied; granted also that governments do at times engage in wealth-producing activities, but a very high percentage of taxation, wherever and whenever imposed, falls on producing industry and must be reckoned as a part of the cost of production. Unless that industry is solvent, there can be no enduring distribution."

Recovery cannot be generated by spending borrowed money, he contended. However, he added, "Persistence of this deceit is really not strange when one considers the temper of the modern times. The attempts of highly centralized governments to manage finance, production and distribution, to parcel out welfare and deliver security, have generated a number of by-products. Most of them fall under the major fallacy that wealth can be created by increasing the velocity of money. 'Pump priming,' 'Townsendism' and the political distribution of bounty are typical among the many.

"Unless all signs fail, we are emerging from the era of wealth-by-wishing and are drafting the course of real recovery. It is charted by experience and it is called solvency. As we plot our position, it is possible to calculate the relation between national income, deficit financing and economic recovery. National income emerges primarily in the production of real wealth. Against that production there now stands the immense charges of the World war, as yet only partially liquidated. Against that production, there also stands the huge and increasing cost of economic experimentation."

In Production Lies Security

It is in production and in the sacrifices of those who save, that welfare and security have substance, concluded Dr. Cadman. "When the whole company of promisers and magicians has departed, the producers and savers will come into their own as the real friends of the common man. In that day we will travel again the highways of reason and reality."

Frank R. Geis, Metallurgical Laboratories, San Francisco, recommended advertising to acquaint the general public as well as the consumer with the value of cast iron products. Mr. Geis spoke before a foundry group meeting.

Administrative and enforcement problems under the California unemployment reserves act were discussed by C. B. Tibbetts, Los Angeles Steel Casting Co., and a member of the state unemployment reserves commission.

"Administrative problems," he said, "start with the line for line budgets which are subject to the approval of two federal agencies—the United States employment service, under the Wagner-Peyster act, and the social security board . . . . The remedy is clear: Unification of both programs under one federal agency."

Following Mr. Tibbetts' address a resolution was passed unanimously favoring changes proposed to simplify administration, reduce administrative costs and speed up benefit payments.

The sixteenth annual conference will be held at Del Monte, Feb. 8-10, 1940.

Elected to the executive committee were:

Foundries

Northern California—Charles P. Hoehn, Enterprise Foundry Co., San Francisco, and E. M. Welch, American Manganese Steel Co., Oakland; Southern California—C. B. Tibbetts, Los Angeles Steel Casting Co., Los Angeles, and Martin Madsen, Madsen Iron Works, Huntington Park.

Merchant Steel

Northern California—H. M. Tayler, Tayler & Spotswood Co., San Francisco, and Charles G. Connors, Kyle & Co., Fresno; Southern California — Donald Priest, Los Angeles Heavy Hardware Co., Los Angeles, and W. M. Anderson, California Hardware Co., Los Angeles.

Manufacturers, Purchasing Agents

Northern California—F. P. Hanson, Pacific Gas & Electric Co., San Francisco; Southern California—E. F. Watkins, Southern California Edison Co., Los Angeles.

Reinforcing Steel

Northern California—W. S. Wetenhall,

California Conference

■ Fifteenth annual meeting of the Iron, Steel and Allied Industries, under auspices of the California State Chamber of Commerce, Del Monte, Feb. 9-11, was one of the most successful in that organization's experience

W. S. Wetenhall & Co., San Francisco, and A. H. Lowe, Soule Steel Co., San Francisco; Southern California—H. G. Haake, Cecco Steel Products Corp., Los Angeles, and E. B. McClure, Truscon Steel Co., Los Angeles.

Steel Mills

Northern California—William A. Ross, Columbia Steel Co., San Francisco; Southern California—P. W. Cotton, Bethlehem Steel Co., Los Angeles.

Steel Plate Fabricators

Northern California—George H. Raitt, Steel Tank & Pipe Co., Berkeley, and George F. Bont, California Steel Products Co., San Francisco; Southern California—J. A. Stever, National Tank & Mfg. Co., Los Angeles, and William W. Mathews, Lacy Mfg. Co., Los Angeles.

Structural Shops

Northern California—P. F. Gillespie, Judson-Pacific Co., San Francisco, and Charles E. Spencer, Bethlehem Steel Co., Alameda; Southern California—A. Neuffer, Bethlehem Steel Co., Los Angeles, and Aldan G. Roach, Consolidated Steel Corp., Los Angeles.

Traffic

Northern California—T. E. Banning, Columbia Steel Co., San Francisco; Southern California—T. A. L. Loretz, Pacific Coast Steel Fabricators association, Los Angeles.

Tubular

Northern California—F. G. Harmon, Columbia Steel Co., San Francisco; Southern California—E. H. McLaughlin, Union Hardware & Metal Co., Los Angeles.

Members of the Pacific Coast Steel Fabricators' association elected:

President, P. F. Gillespie, Judson-Pacific Co., San Francisco; secretary and treasurer, B. J. Osborne, Moore Drydock Co., Oakland.

Directors: H. G. Tallerday, Western Pipe & Steel Co., San Francisco; Geo. Raitt, Steel Tank & Pipe Co., Berkeley; B. G. Henderson, Consolidated Steel Corp., Los Angeles; C. T. Timmons, American Pipe & Steel Corp., Los Angeles; John Stever, National Tank & Pipe Co., Los Angeles; Charles McGonigle, Poole & McGonigle, Portland, Oreg.; Tom Henning, Steel Tank & Pipe Co. of Oregon, Portland, Oreg.; Paul Piggott, Pacific Car & Foundry Co., Seattle; G. F. Shaver, Puget Sound Machinery Depot, Seattle.

■ Columbia Steel Co., San Francisco, completed 1938 with only nine industrial accidents at its plant at Pittsburg, Calif.

AVIATION

EXPANSION PLANS FOLLOW LARGE MILITARY ORDERS

■ FRANCE last week increased its current orders for American fighting aircraft to 615 planes costing nearly $65,000,000. Contracts went to Glenn L. Martin Co., Baltimore, for 115 light bombers; North American Aviation Inc., Inglewood, Calif., 200 basic trainers; and Douglas Aircraft Co., Santa Monica, Calif., 100 attack bombers. Previously booked were 200 Curtiss pursuit ships.

Martin's contract amounts to $11,000,000. Upon receiving the award company announced it will expand its Middle River, Md., plant with a 500,000-square foot addition costing $1,850,000. Albert Kahn Inc., Detroit, is the designer. Machinery costing almost $900,000 has already been placed. Pratt & Whitney division of United Aircraft Corp., Hartford, Conn., is to build 230 engines for the French order.

Air Corps Makes Awards

Army air corps has awarded a contract to Beech Aircraft Corp., Wichita, Kans., for ten biplanes and spare parts. According to W. H. Beech, president, the company is expecting to increase its assembly facilities.

Recent war department orders for aeronautical equipment include: Pittsburgh Screw & Bolt Corp., Pittsburgh, $57,000; Ohio Seamless Tube Co., Shelby, O., $53,684; Bendix Aviation Corp., South Bend, Ind., $49,152; Niles-Bement-Pond Co., Hartford, Conn., $50,870; Joseph T. Ryerson & Son Inc., Chicago, $27,300; Jones & Lamson Machine Co., Springfield, Vt., $25,825; and Bausch & Lomb Optical Co., Rochester, N. Y., $24,957.

Julian P. Friez & Sons Inc., Baltimore, division of Bendix Aviation Corp., has acquired a site and soon will begin construction of a new plant to cost about $500,000. Company makes aviation and other scientific instruments.

Plans have been disclosed by Ryan Aeronautical Corp., San Diego, Calif., for building two new factory units totaling 17,000 square feet of floor area. Considerable production equipment is to be installed.

Kinner Airplane & Motor Corp., Glendale, Calif., operating under bankruptcy laws for some time, has been purchased by B. B. Robinson and associates for a price reported to be $200,000. The new owners plan to expand the firm's engine manufacturing capacity.

NEMA Outlines 1939 Activity Program

■ National Electrical Manufacturers' association, New York, has issued a 55-page brochure on "What NEMA Will Do in 1939." The pamphlet carries detailed descriptions of the 90 projects which make up the association's co-operative activities and services.

Projects are of four types: Those providing "tools" for the direct use of management in dealing with day-to-day problems; those which "break the ice" for the direct efforts of individual members; those which seek to protect markets or promote conditions favorable thereto; those which concern the general welfare of the industry.

Drop Forging Group Votes Safe Practice Rule

■ Unanimous approval to a recommendation that "all persons in the plant, including visitors, be required to wear safety goggles while on plant property" was voted by the Drop Forging association at a recent meeting in Cleveland.

Recommendation's approval followed a report on eye accidents by the safety committee.

Editorial

A Suggested Approach to Re-Employment

■ THROUGH its Forum on Re-Employment during the past two months, STEEL has had the assistance of a number of able industrial thinkers in throwing light on how the country's No. 1 problem—unemployment—is to be solved.

Their conclusions, in the main, are that hastily formulated laws and unwise government policies are to blame for industry's inability to provide more employment and that this inability probably will continue until these laws and policies are revised.

The principal conclusion by these commentators is that existing laws and policies discourage capital from venturing into industry. The ample funds in our banks have been virtually sterilized insofar as their use in re-equipping, and thereby reviving older industries, and in developing and properly equipping new industries, is concerned. Our money today is being used to finance unemployment, instead of financing employment as in the past. Investment of many billions of new capital will be required to provide full employment.

Unsound Tax System Is Principal Deterrent to Larger Employment

How can the obstacles that hold back a free flow of capital into industry be removed? Mainly through careful but complete overhauling of our entire system of taxation. These commentators feel that industry can and should support a sizable tax burden. But the weight of the burden should not be such as to threaten a business collapse, nor should it be of a character that discourages industrial expansion.

The tax system should be devoid of punitive features and should be fashioned with the object of raising a sufficient amount of revenue for the government, without preventing management from returning a fair profit on invested capital.

The foregoing is the main conclusion. The commentators discuss disturbing effects of the labor law, the extent to which curtailed demand for capital goods has contributed to the depression, bad effects of government competition with industry and other manifestations in recent years. One devotes his discussion to the contention that the greatest good to the greatest number will come through private enterprise, rather than through government participation in industrial affairs. But, generally the tax system is held the key log in the jam.

Industry Is Ready To Expand When Profit Possibility Is Improved

One contributor points out that the first step in solving a problem is to define the problem. He criticizes the national administration because after seven years it still has not defined the unemployment problem. He thinks the problem could be solved rather quickly if broken into its principal components and studied, on a nonpartisan basis, by the best informed experts.

Unfortunately, the present administration divides the population into groups, thus preventing it from acting effectively in the common good. It is pulled hither and thither by organized minorities, and does not concentrate on the main problem.

The unemployment problem can be overcome if it is approached from the right point of view. Industry may be viewed as so many eager horses waiting for the starter's pistol—in this case a profit expectancy that will lead to industrial expansion and widespread re-employment.

Some of the members of the present congress already hold this view. No doubt others can be persuaded to that view if they are made to understand what makes business "go". Continued educational effort along these lines is of vital importance to industry, for our whole free enterprise system will continue to be threatened as long as the unemployment problem is of fundamental importance.

The BUSINESS TREND

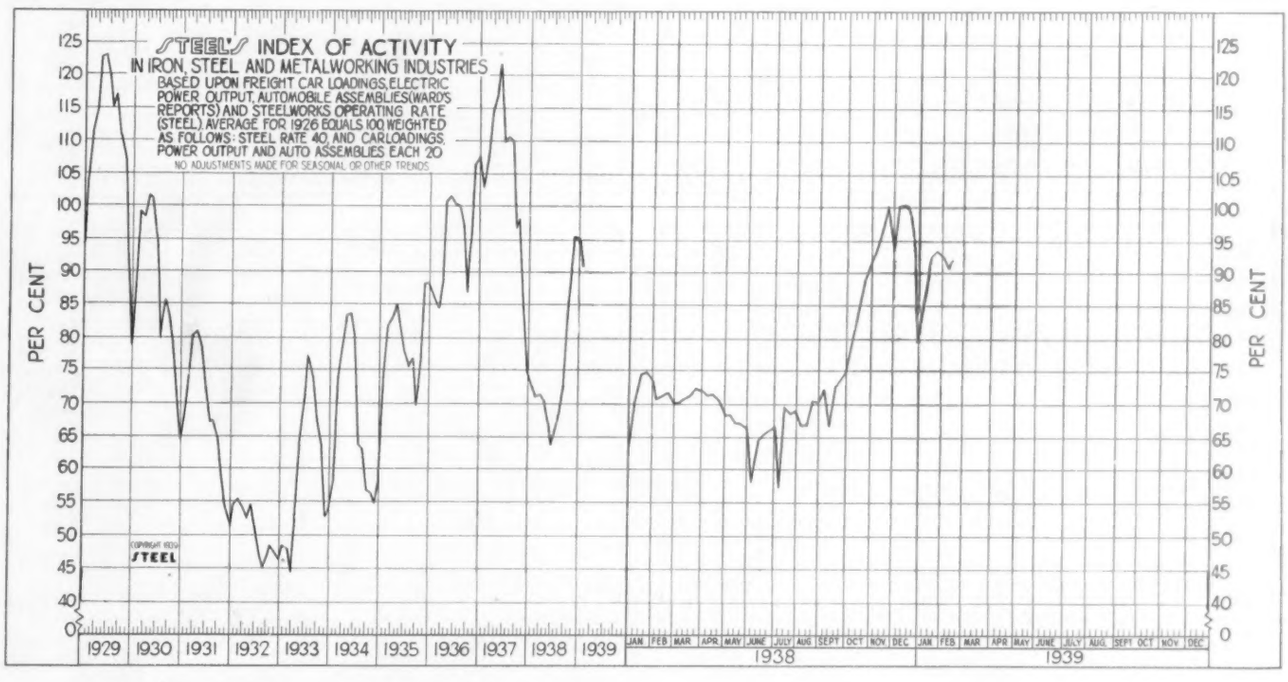
Activity Index Regains Part of Recent Losses

■ WHILE the present period of consolidation in industrial activity is naturally one of mixed trends, the underlying cumulative forces of the business cycle appear to be working towards an early revival. However, the free flow of capital into industry remains at a low ebb, with the resultant detriment to the heavy industries. The important question today is to what extent private capital can be induced to fill the gap following the peak in governmental expenditures expected to be reached this spring.

Reflecting moderate gains in three of the four business indicators from which it is composed, STEEL'S index of activity in the iron, steel and metalworking industries advanced 1.4 points to 92.1 in the week ended Feb. 11. This represents a reversal of the downward tendency of the preceding two weeks, but failed to restore the index to the mid-January level. A year ago the index stood at 71.2.

In spite of the absence of large tonnage purchases from the automotive industry, the national steel rate advanced 1 point to 54 per cent in the week ended Feb. 11, to touch a new high for this year. Still further improvement in steelmaking operations is anticipated for the week ended Feb. 18. However, no substantial gains in steelworks operations are expected until the anticipated increased seasonal demand from the automotive and construction industries materializes during the early spring months.

Automobile assemblies of 84,500 units during the week


STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL). AVERAGE FOR 1926 EQUALS 100 WEIGHTED AS FOLLOWS: STEEL RATE 40, AND CARLOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20
NO ADJUSTMENTS MADE FOR SEASONAL OR OTHER TRENDS
COPYRIGHT 1939 STEEL
PER CENT
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1938
1939

STEEL'S index of activity gained 1.4 *points to* 92.1 *per cent in the week ended Feb.* 11:

Week ending	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Nov. 26	93.9	72.7	105.2	86.0	54.4	55.4	44.5	51.4	66.9	80.9
Dec. 3	100.1	81.5	108.4	91.7	51.9	49.7	45.3	52.9	69.2	85.0
Dec. 10	100.7	80.5	113.9	91.8	56.8	52.6	46.6	53.1	68.2	83.4
Dec. 17	99.8	79.4	114.8	91.9	60.6	56.0	49.3	52.3	67.3	79.7
Dec. 24	94.8	69.5	93.3	77.3	64.4	58.0	46.9	46.8	52.3	64.9
Dec. 31	79.9	62.7	96.6	78.2	60.8	53.7	42.9	48.8	58.5	74.3
	1939	**1938**	**1937**	**1936**	**1935**	**1934**	**1933**	**1932**	**1931**	**1930**	**1929**
Jan. 7	86.5	70.1	107.8	90.2	65.4	53.6	45.3	55.8	69.2	88.1	94.8
Jan. 14	91.9	74.4	106.7	89.3	73.8	58.1	48.6	56.2	72.1	91.8	104.2
Jan. 21	93.0	74.7	104.0	86.0	78.1	60.9	49.8	55.8	72.9	96.3	107.5
Jan. 28	92.9	73.8	99.6	86.5	79.5	62.3	50.8	56.2	72.9	97.4	109.8
Feb. 4	90.7	70.9	100.8	83.8	81.8	66.9	49.9	56.0	74.9	100.8	111.3
Feb. 11	92.1	71.2	101.9	85.9	82.7	70.7	48.7	55.5	75.4	100.9	111.7

ended Feb. 11 regained some of the ground lost in the preceding week when output fell to 79,410, due in part to severe winter weather. The 84,500 units assembled in the week ended Feb. 11 is about 46 per cent above the 57,810 produced in the comparable week last year. A moderate seasonal downward movement in automobile production is anticipated for the week ended Feb. 18.

Revenue freight carloadings gained more than seasonally in the week ended Feb. 11 to 579,918. This compares with 576,790 in the preceding week and 542,991 in the compabable week last year. Electric power consumption eased seasonally to 2,268,387,000 kilowatt-hours in the week ended Feb. 11 from the 2,287,248,000 kilowatt-hour level during the preceding week.

RAILWAY OPERATING INCOME OFF SLIGHTLY

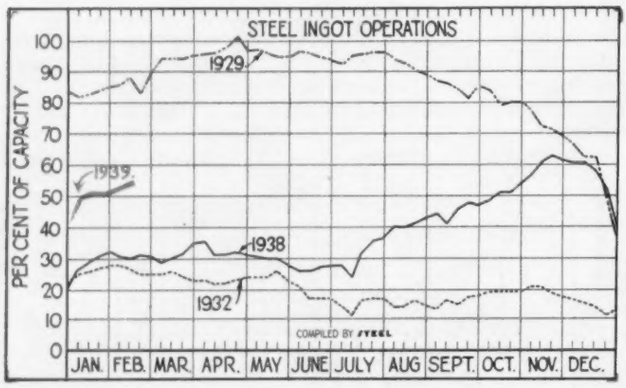
Net operating income for class I railroads during December amounted to $49,373,177, against $49,664,682 in November and $25,994,857 in December, 1937. Rate of return on property investment in December was 2.67 per cent, compared with 1.41 per cent in the same month the preceding year. For the twelve months ended Dec. 31, 1938, net operating income for class I railroads aggregated $372,846,314, against $590,203,896 in 1937 and $607,347,115 in 1936. Corresponding rate of return on property investment for those three years was 1.43 per cent in 1938, 2.27 per cent in 1937 and 2.58 per cent in 1936.

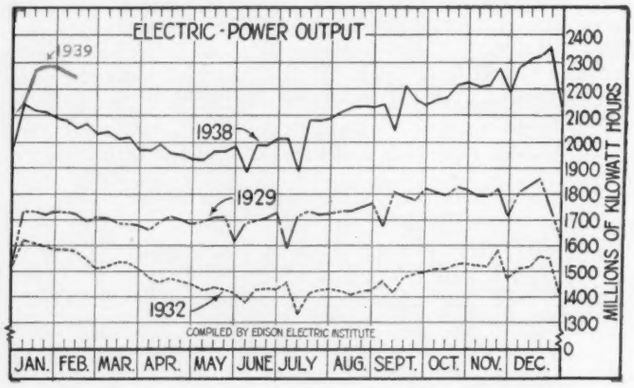
CAR AWARDS IN SHARP DECLINE

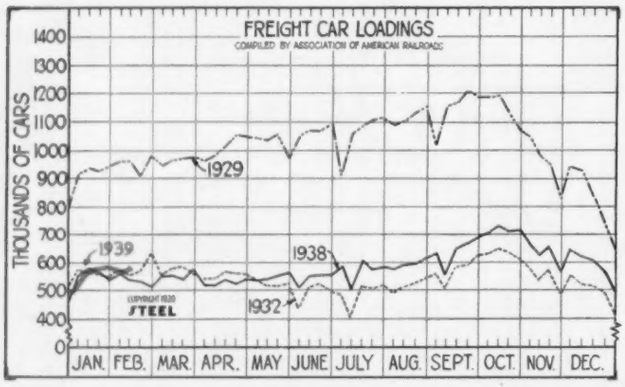
Domestic freight car awards during January totaled only three cars, compared with 2581 in December and 1232 in November. In January, 1938 car awards totaled 25, while in the same month 1937 there were 17,806 cars placed. Excluding the poor showing in July last year when there were no freight car awards, the January, 1939, total of three awards represents the lowest month since May, 1935.

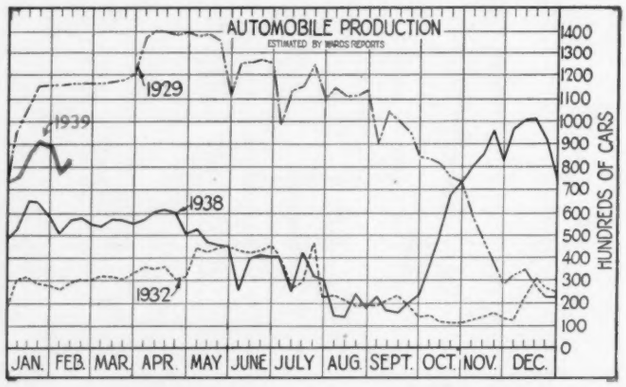
STEEL SHIPMENTS LARGEST SINCE OCTOBER, 1937

Shipments of finished steel products during January by the United States Steel Corp. recorded an encouraging gain of 95,101 tons to 789,305. This compares with 694,204 tons in December and represents an increase of 270,983 tons over the 518,322 tons shipped in January last year. January shipments were the largest since October, 1937, when 792,310 tons were shipped.



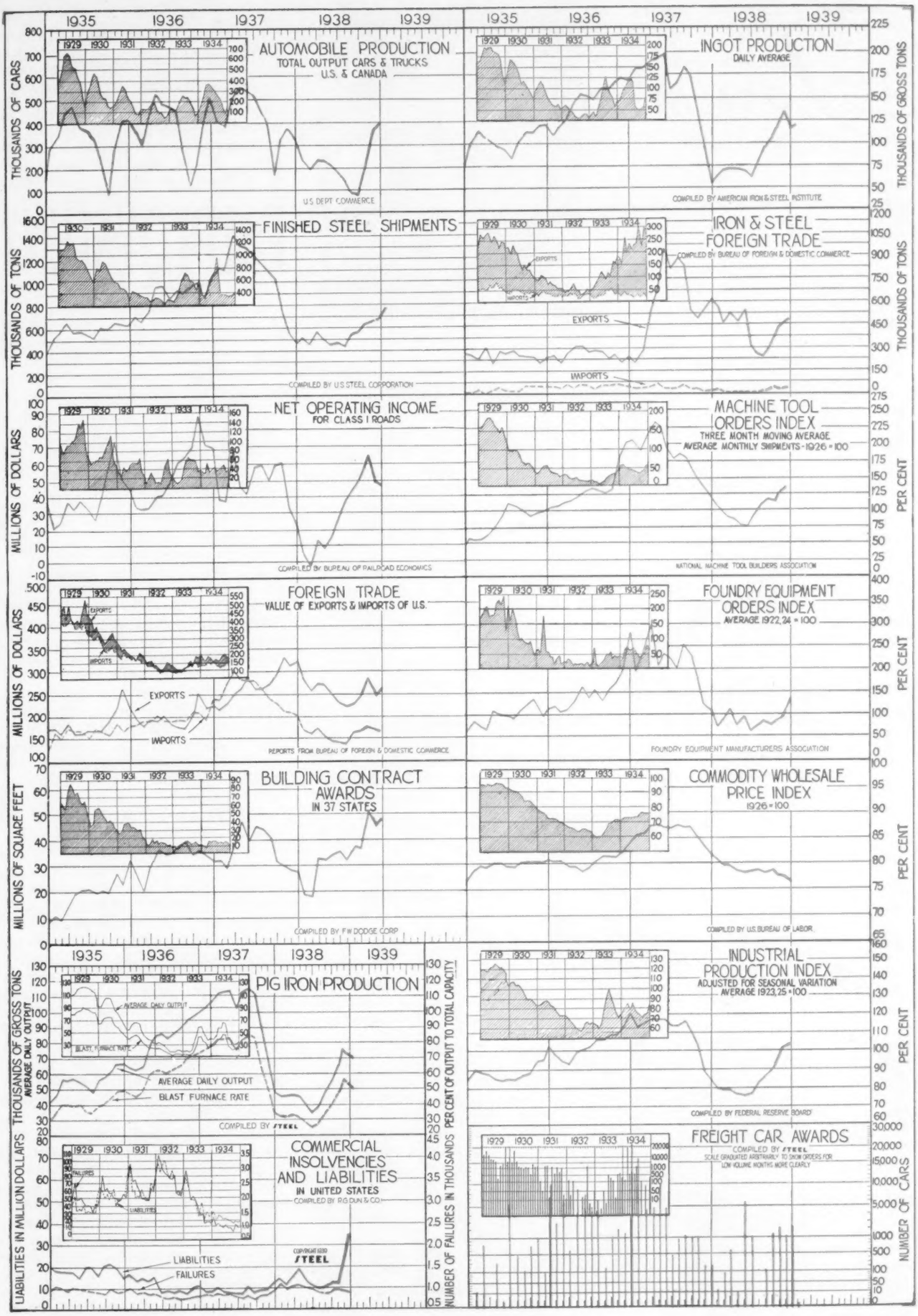




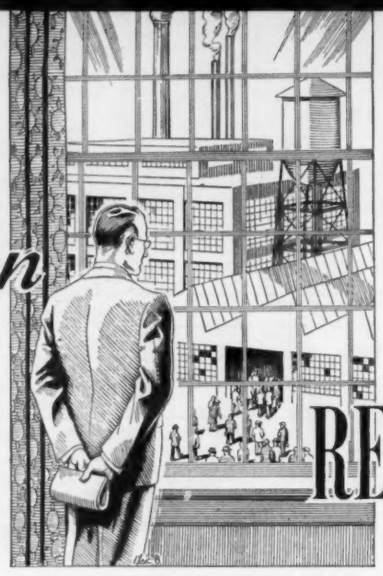


Week ending	Steelworks Operating Rate Per Cent 1938	1932	1929	Electric Power Output Million KWH 1938	1932	1929	Freight Car Loadings Thousands of Cars 1938	1932	1929	Weekly Auto Output 1938	1932	1929
Nov. 5	57.5	21.0	80.0	2,207	1,525	1,816	673	587	1,072	80,030	12,247	73,048
Nov. 12	61.5	21.0	77.5	2,209	1,521	1,798	637	537	1,050	86,300	13,685	61,824
Nov. 19	63.0	19.0	73.0	2,270	1,582	1,794	657	576	983	96,735	16,497	49,160
Nov. 26	62.0	17.5	71.0	2,183	1,475	1,818	562	494	950	84,930	13,389	38,219
Dec. 3	61.0	16.0	69.5	2,285	1,510	1,718	649	547	837	97,795	12,398	28,079
Dec. 10	61.0	15.0	67.0	2,318	1,519	1,806	619	521	937	100,705	21,695	31,255
Dec. 17	58.0	14.0	63.5	2,332	1,563	1,841	606	517	923	102,902	30,589	33,293
Dec. 24	52.0	12.0	63.5	2,362	1,554	1,860	574	495	843	92,890	27,396	23,216
Dec. 31	40.0	13.0	38.5	2,120	1,415	1,638	500	407	638	75,215	25,598	23,967

	1939	1938	1932	1929	1939	1938	1932	1929	1939	1938	1932	1929	1939	1938	1932	1929
Jan. 7	51.5	26.0	25.0	84.0	2,169	2,139	1,619	1,542	531	552	573	799	76,685	54,084	30,755	75,000
Jan. 14	52.0	29.0	26.0	82.0	2,269	2,115	1,602	1,734	587	580	572	914	86,925	65,735	31,416	95,000
Jan. 21	51.5	30.5	27.0	83.0	2,289	2,108	1,598	1,737	590	570	562	932	90,205	65,418	29,365	105,000
Jan. 28	51.5	33.0	28.5	84.0	2,292	2,098	1,588	1,717	594	553	560	926	89,200	59,365	28,950	115,000
Feb. 4	53.0	31.0	28.5	85.0	2,287	2,082	1,588	1,728	577	564	575	947	79,410	51,443	27,110	116,000
Feb. 11	54.0	30.0	27.0	86.0	2,268	2,052	1,578	1,726	580	543	562	956	84,500	57,810	29,320	116,000


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT. COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922,24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACT AWARDS IN 37 STATES
COMPILED BY F.W. DODGE CORP.
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923,25 = 100
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
COPYRIGHT 1939 STEEL
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
THOUSANDS OF CARS
THOUSANDS OF TONS
MILLIONS OF DOLLARS
MILLIONS OF SQUARE FEET
THOUSANDS OF GROSS TONS AVERAGE DAILY OUTPUT
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
PER CENT OF OUTPUT TO TOTAL CAPACITY
PER CENT
NUMBER OF CARS

Forum on RE-EMPLOYMENT



■ WE HAVE heard it stated that it would be desirable to have the thoughts of young men given wider expression in industrial, economic and political affairs. Then we have heard people say such expressions might not be desirable, because young men's ideas are too radical, too impractical, lacking in balanced conservatism which experience brings.

Be that as it may, we have opened this Forum to a young man. The writer of this week's article is Paul E. Heckel, executive assistant, Cincinnnati Bickford Tool Co., Cincinnati. The company, under the management of the widely known and highly respected August H. Tuechter, has been for years a leading machine tool builder.

Mr. Heckel believes that increased sensitivity in employe-employer relations is a condition which industry must recognize, and meet constructively. While political pressure may have forced too many changes too rapidly, the general trend is definitely in the direction of change.

Among other things, Mr. Heckel urges modernization of industrial and domestic sanitation and lighting facilities, this in the cause of general health and efficiency. He shows how far-reaching will be stimulation to employment throughout the country if these projects are widely undertaken.

According to Mr. Heckel, real hope for lasting industrial prosperity lies in peace—not in war. He says: "If we apply modern knowledge to constructive ends, life is destined to become better. If we apply it to destructive ends, the eventual result will be the collapse not only of business but of civilization. After all, mankind is industry's only market!"

—The Editors

■ INCREASED sensitivity in the field of employe-employer relations is a condition which industry must recognize. This condition must be met in some constructive manner—not merely fought against. "New Dealism" perhaps has brought about too many changes too rapidly for the immediate good of anyone, but nevertheless the trend has been set. Because this trend is in the same general direction as the long-time industrial trend in employe-employer relations, undoubtedly it is here to stay.

In the light of recently increased sensitivity in these relations, it is now up to private enterprise to handle the situation in just as positive and constructive a manner as possible—both in its immediate dealings with employes and in its general policies. Almost every conceivable type of service beneficial to employes should be given intensive consideration from every favorable angle. They should be given actual trial and if favorable they should be put into effect.

Oftentimes suggestions for additional services to employes meet with managerial disapproval because additional personnel will be required if the plans are put into effect. But after all, is not the big problem of the moment actually that of putting to work as many as possible of our unemployed? Let us not condemn any constructive project which will call for any increases in manpower and material. We must remember always that in this closely integrated world of 1939, any job creates employment far beyond the immediate project, and that there is no reason why any well planned project should not be distinctly advantageous to one's own business besides serving as a boost to the more general cause of re-employment.

Let us suggest as a concrete example the thorough modernization of factory washrooms. We mean real modernization which would bring them up to those standards so generally accepted in the "front office" and those to which the majority of urban Americans are now accustomed in their homes.

A program such as this—if generally carried out—would result in a rush of business which would tax the manufacturers of the necessary equipment and fixtures to the point where they would have to hire a great number of new workers. It would lead to a big jump in employment among plumbers and other related service industries all over the country. Not only that, it undoubtedly would sustain these demands by inspiring a rising tide of modernization of sanitation standards—both public and private—throughout the country.

Here is another suggestion. Suppose that industry in general should adopt the commendable policy of some of its more forward-looking members, of having periodic and regular dental, ocular and general physical examinations. Can there be much contradiction to the statement that few, if any, city or county medical services are now set up—as far as man power is concerned—to meet such a demand as that?

Would not this program—if carried out by industry itself—result in a big jump in employment among professional and semi-professional people and their suppliers?

Now here is another thing. We all know that hundreds of thousands of dollars have been spent in laboratory research on the determination of proper standards of illumination. In spite of all this, a great number of factory and office workers are still struggling along under illumination intensities which are a hazard to their eyes, their safety and their efficiency.

Sweeping modernization of lighting facilities in factories, offices, public buildings and homes, to bring intensities up to the modern accepted standards, holds tremendous employment possibilities. Such a program would be vastly more sound economically and far less temporary than most of the government's recent alphabetical debauches.

Modernization Far-Reaching

The resulting heavy demand for current would call for more capacity and efficiency in the transmission lines, more distribution centers, more switching and transformer equipment, modernization of power plants and more generating equipment. The increase in fuel consumption would help the coal mines and the railroads. The construction involved would be reflected immediately in awards to the heavy industries and building trades. The additional field and maintenance equipment needed would give a big boost to the automotive industry. Demand for added manpower all along the line would be immediate and lasting.

To be healthy, any such program must be sponsored by private enterprise, financed by private capital and executed by private industry. It is true that the initiation of any such undertakings involves a gamble in "futures" about which we can all foresee all too little. Long range and healthily constructive economic programs are difficult if not impossible to carry out when the civilized world is so terribly apprehensive over the possibility of an all-engulfing war.

We have come to realize that we can no longer function effectively if divided sharply into tribes, or clans, or even into nations. Neither can our various social groups or industries stand alone. Realization must come that we and our institutions are all part of one big civilization. High-speed transportation and instantaneous communication have made this a *world civilization.* Under these conditions no tide can remain constantly above the common level. From now on we all

Paul E. Heckel

Executive Assistant,
Cincinnati Bickford Tool Co.
Cincinnati

are destined to prosper or to suffer together—depending upon mankind's own actions.

To be profitable, business must produce desirable goods or offer desirable services which can be sold advantageously to all concerned. Human consumption and satisfaction are at the foundation of all markets. If we apply modern knowledge to constructive ends, life is destined to become better. If we apply it to destructive ends, the eventual result will be the collapse not only of business but of civilization itself.

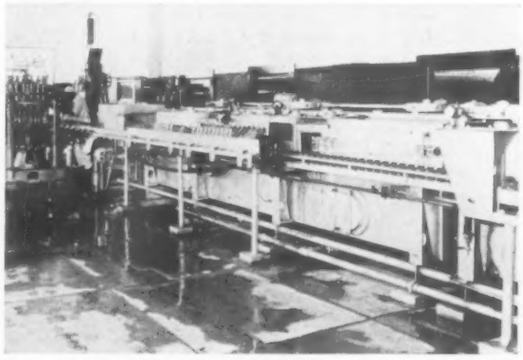
War certainly can never be considered as an effective application of modern intelligence. It is impossible simultaneously to be devoted both to construction and destruction. Therefore, any leader of American business who gloats over the possibility of profits derived from preparations for war or from war itself, is showing no more intelligence than those dictators who are mortgaging all their national resources—both human and material—to the cause of hate and destruction.

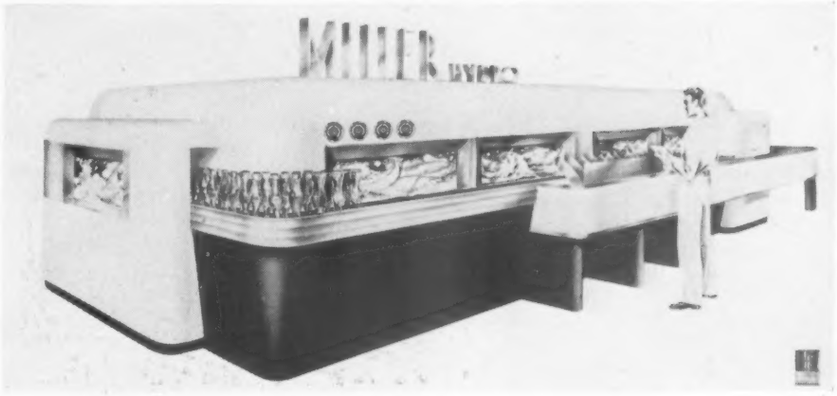
Every true leader of American business will foster peace with every resource at his command. Only with assurance of peace will markets ever regain that stability which will assure steadiness of employment and high volume of output which are prime essentials to American industry as now constituted.

These suggestions might be summarized—or perhaps generalized—in this manner: First, intelligent people the world over must work for peace just as ardently as fools are working for war; second, our boasted modern wisdom must be applied toward human, as well as industrial, advancement. After all, mankind is industry's only market!

Streamlined Steel in Bottle Washer Redesign

■ **By modernizing the design of its bottle washing machine from that shown at the right to the streamlined model illustrated below, Miller Hydro Co., Bainbridge, Ga., was able to sell over $100,000 worth of equipment before the first new model was built. Housing is sheet steel, finished in black and white, and stainless steel is used on the interior. Redesign was by Barnes & Reinecke, Chicago industrial designers**





New Straightline *Brass Mill* Goes Into Production

Modern mill employs central production control setup using a battery of graphic instruments which show promptly the origin of production delays. Plant features completely mechanized handling, latest rolling and heat treating

■ REVERE Copper & Brass Inc., New York, recently placed in operation a new brass mill at its Rome, N. Y., plant, utilizing to the fullest extent the latest practices in rolling, heat-treating and handling methods, a large portion of which were developed by the company's own engineers.

A principal feature of the installation is a battery of instruments in a separate building housing production offices which record the exact operating time of every machine in the entire plant. These instruments provide mill executives with an accurate picture of operations which promptly indicates the place of trouble when production is interrupted or lagging. All data is on file and the management may at any time check the working period of a machine on a single operation or a number of operations over a desired period. It thus is possible to adjust and co-ordinate all operations to harmonize for greatest possible efficiency.

The brass mill is housed in a modern single-story building of brick and steel construction, which also includes the copper mill. The plant is divided into three principal bays extending from east to west, with a fourth bay running at right angles at the west end incorporating the shipping department and the storage section for finished material.

North or first bay, broadly speaking, includes the brass breakdown mill, the first ready-to-finish mill and attendant auxiliary equipment, such as annealing furnaces, roller leveler, slitter and cleaning equipment. The second or center bay includes the third and fourth ready-to-finish or rundown mills, both of which are operated in tandem, finishing stands and necessary annealing equipment.

The third or south bay houses the copper rolling mill, built in 1929, which includes four stands of 4-high mills operated in tandem,

Aerial view of mill, Revere Copper & Brass Co., Rome, N. Y.

the only installation of its kind in the industry. Part of the finishing equipment in the center bay also is used for copper. A wing adjacent to the south bay at its east end serves as storage space for copper cakes and includes a railroad siding for incoming material. The entire plant is laid out to take full advantage of straightline production, as indicated by this broad picture.

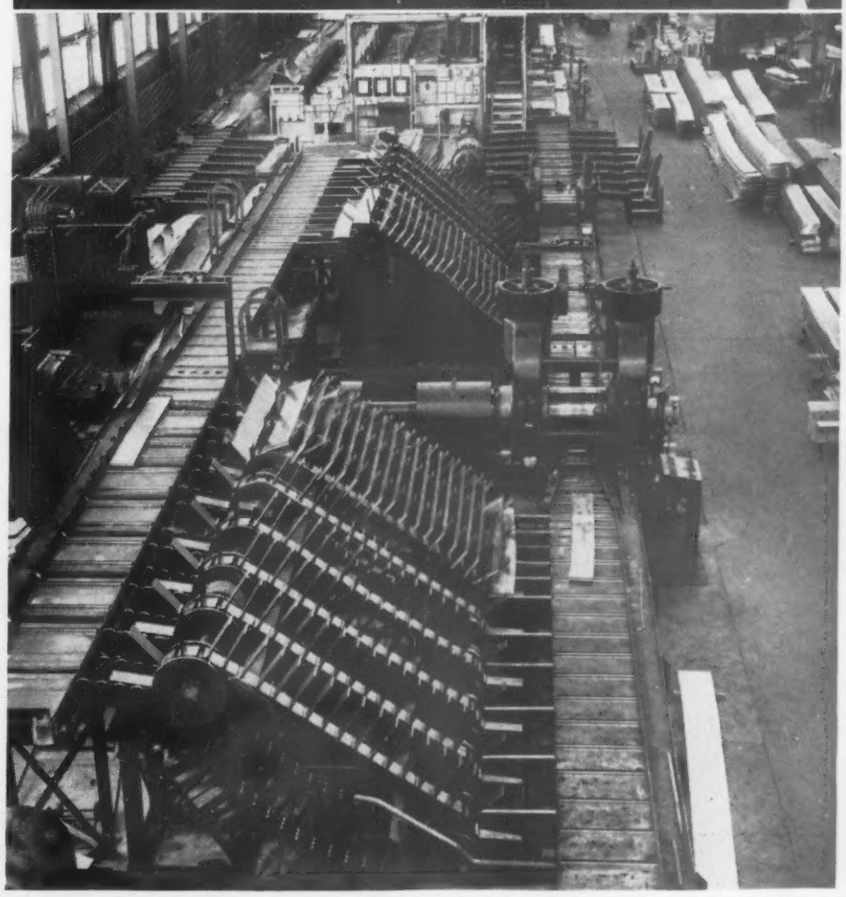
Roller conveyors, both of the gravity and motivated types, are used wherever possible to facilitate handling of material. The north bay also is equipped with two 7½-ton cranes and the south bay by a 15-ton and a 5-ton crane. The shipping department has one 5-ton crane. Trucks and skids also are used, principally in the center bay, for handling finished material.

Bars Fed on Escalator

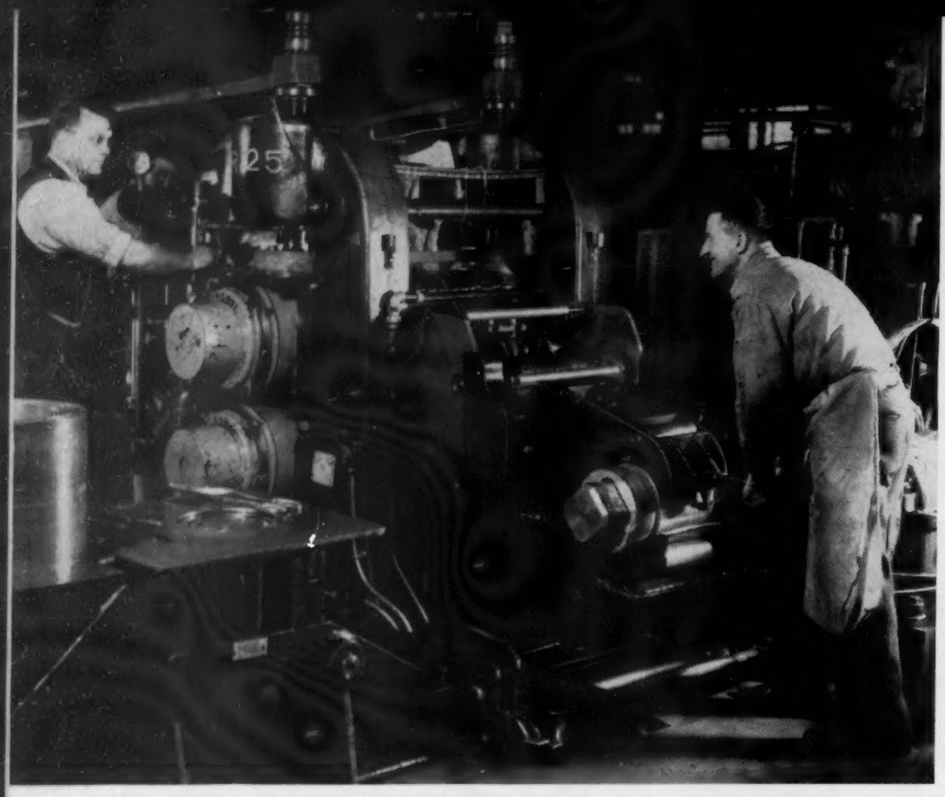
First breakdown mill is located in the west end of the north bay, and the brass slabs are brought in from the casting shop at this point and are unloaded on a mechanical conveyor and fed to the 2-high cold mill one at a time. This mill is equipped with an ingenious escalator conveyor system on which the bars travel and are automatically fed and refed into the breakdown mill, each sequence being controlled by a series of electric eyes.

Next in line is a walking-beam annealing furnace through which the bars move automatically and subsequently are conveyed by roller conveyors back to the mill for additional passes or directly to the overhauling machine. After overhauling, bars are carried by crane to the first rundown mill of the 4-high type equipped with antifriction bearings and a coiler. From this point on the brass is processed in coils, and automatic handling again comes into full play on all operations.

Coils may be moved in any one of several directions depending upon gage and finish required. The



Top, pouring 2 x 20 x 72-inch slabs into water cooled molds handled by electric hoists. Furnaces, on tracks, may be shifted to facilitate pouring. Center, control room with graphic meters recording operation of all mill units. Bottom, 2-high breakdown mill. Bars placed on conveyor feeding mill pass through rolls, travel up escalator system to shuttle conveyor at higher level and are returned to opposite side of mill, and down escalator for additional passes. Slabs to be annealed between passes travel to annealing walking-beam furnace at extreme rear and back on other conveyors. Same furnace gives final plant anneal. Photoelectric relays permit bar to enter mill rolls only when predecessor is out of way



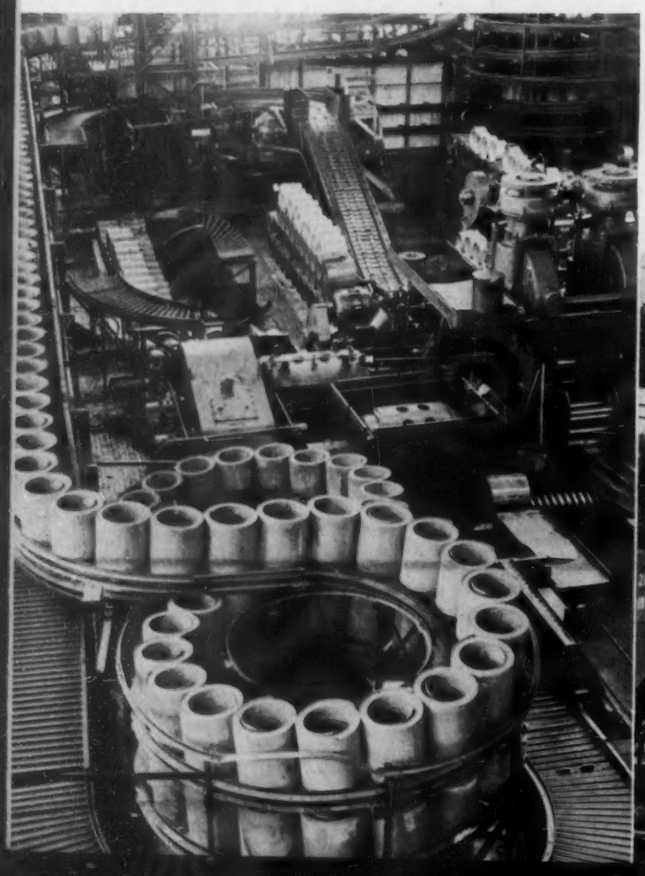
brass may be returned automatically to the entry side for additional passes, to the double-deck recuperative furnace for annealing, to the continuous pickler, to the next bay where the ready-to-finish stands are located or to a platform for removal by crane to the storage section. Incidentally a system of reservoirs between each operation and the next increases flexibility and continuity of production, assuring a steady flow of work to rolls, annealing furnaces, picklers, etc. Work also is returned to the conveying system by means of the platform for transfer to the finishing stands in the center bay after it has been pickled and slit.

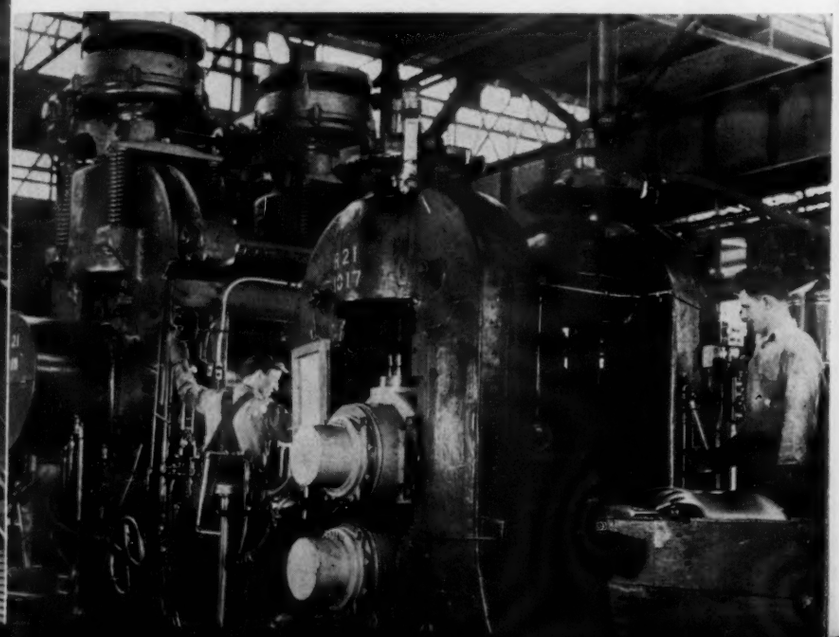
Second rundown mill, located in the east end of the center bay, consists of a 2-high and a 4-high mill operated in tandem and equipped with antifriction bearings to avoid roll distortion and an electrically driven constant-tension blocker. A recoiler is fitted with a device to prevent harmful stretching of the metal. This device controls the peripheral speed. The mill also is equipped with a conveying system for returning the coils for repassing. Adjacent to the second rundown tandem mill are two 28-inch single stand mills for handling heavy gage, wide material.

After this heat treatment, the brass must be cleaned again. The lighter gages are cleaned in a continuous double-deck pickler, scrubber, washer and dryer designed by Revere engineers to handle two coils at the same time. Heavier gages are cleaned in a single-deck machine.

Also located in this bay and next in line are a tandem mill and four single-stand finishing mills. The tandem mill, consists of 2-high and 4-high stands for rolling narrower widths and smaller gages. Like the second rundown mill, it is equipped with antifriction bearings, constant-tension blocker and recoiler. The finishing stands are similarly equipped.

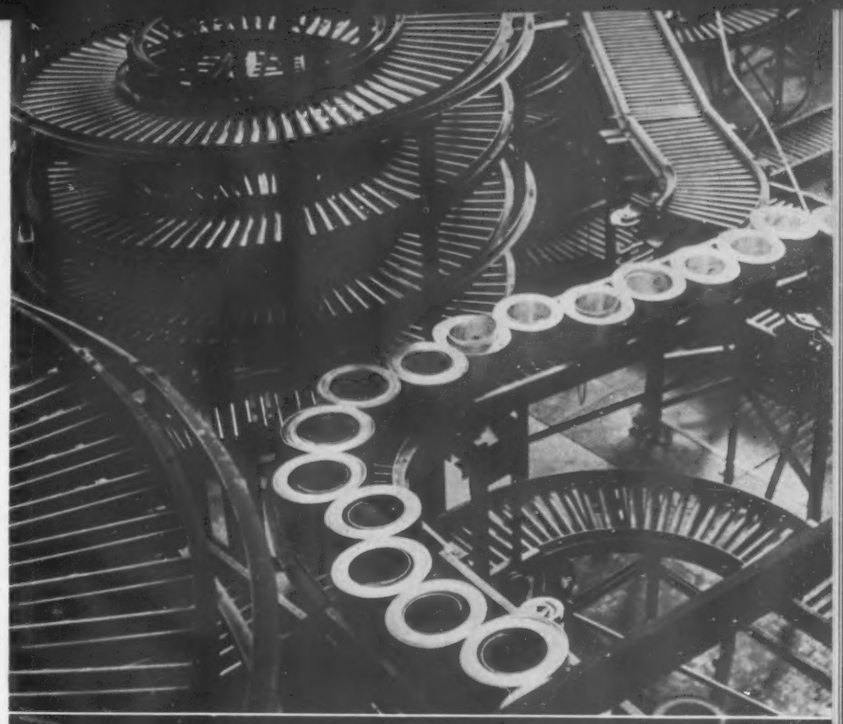
The balance of the center bay is devoted to various finishing and inspection operations, depending upon customer requirements. Included is a battery of bell type furnaces for bright annealing both brass and copper in coils. Final operations, of course, take place near the west end of the center bay so transfer to the adjacent shipping department is a comparatively simple movement.





Top, one of four single-stand finishing mills. It is equipped with tension blockers and antifriction bearings. Lower left, entry side of 4-high mill, at right. Here 25-foot bars are mechanically fed through and automatically coiled after first pass. Coils to be repassed travel up escalator at rear and are returned on conveyor. If heat treating or annealing is required between passes, coils pass up elevator at left rear center, to conveyor, through roller hearth furnace. Coils go through recuperative furnace at one level and come back at a higher level. Conveyor then takes coils to rundown mill, to continuous pickling and cleaning machine or to storage. Annealed coils at left go down circular storage conveyor to be repassed. Lower right, ready-to-finish stands in tandem, equipped with antifriction bearings and tension blockers

Top right, merry-go-round conveyors act as storage as well as carrying material from level to level. Coils pass to and from recuperative annealing furnace on these conveyors which also carry them to and from rundown mill, continuous picklers and slitters. Special straightline pickling and cleaning machine was developed by Revere engineers to eliminate laborious and time consuming methods previously employed. It automatically uncoils, pickles, scrubs, washes, dries and recoils material



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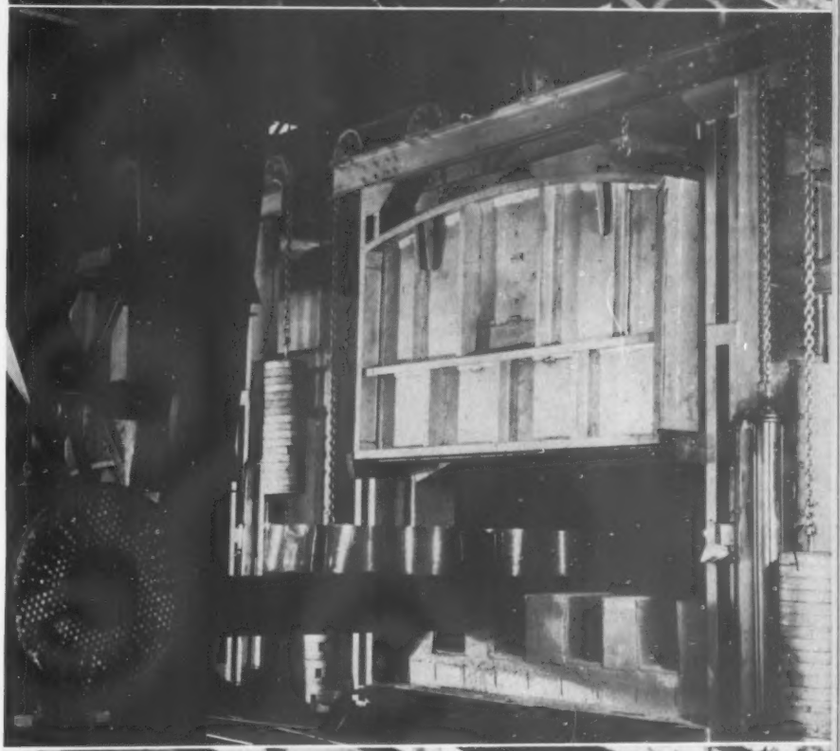
Right center, recirculating furnace for batch annealing assures uniform temperature throughout the charge. Coils are loaded on pans handled by mechanical loader and unloader shown here. After metal comes from heat-treating operation following final pass, it is cleaned again in a continuous, pickler, scrubber, washer and drier, arranged in two decks to handle two coils simultaneously. Work is scrubbed in the reagent. Coils are joined by a stitcher. This unit handles only lighter gages, heavier gages going through a continuous pickler similar to the one in the first bay



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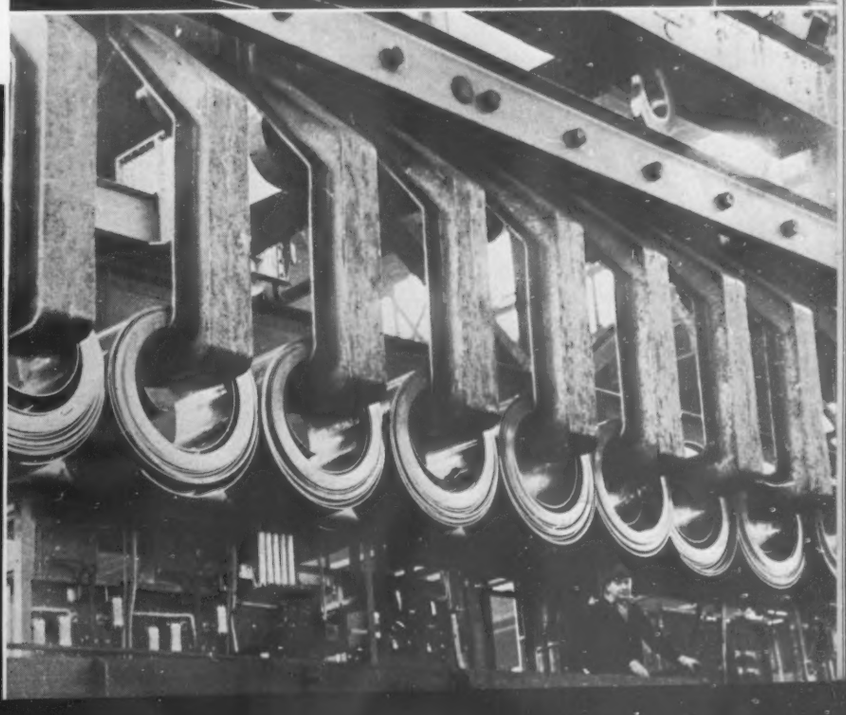
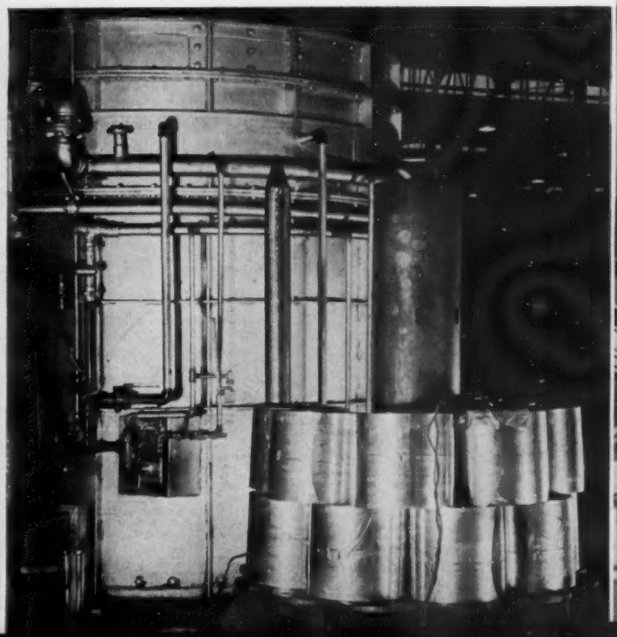
Lower left, one of a battery of bell type, bright annealing furnaces used in finishing operations. Between rolling operations on the tandem mill, brass is subjected to heat treating, mainly annealing. Up to the ready-to-finish stage, the annealing is done in continuous furnaces well adapted to the more general characteristics of the heavy gage metal. As the strip approaches final stages, batch type annealing is employed because of the specific treatment of individual lots that this permits

●

Lower right, this carrier handles 14 coils at a time to and from a storage platform for simifinished material near the conveyor lines, rundown mill, slitter and continuous pickler. Tilts or turnovers are incorporated in the lines to turn over the coils as required. Final operations include slitting, inspecting and packing for shipment





Concealed Fasteners

Special fastener units permit wide flexibility in design of streamlined truck bodies and similar structures. Eliminate bolt, rivet, screw heads. Joints invisible

■ THE DEMAND for sleek, smooth, modern streamlining in the commercial truck body industry resulted in development of a fastening method which employs strong concealed Permagrip fasteners to relieve the outer metal surface of nuts, heads or bolts, rivets, screws or nails. These fasteners also eliminate joint moldings and the like. The Permagrip system is a development of Ernest Schaefer, Cleveland.

The Permagrip method has a number of advantages which makes it suitable not only for auto body construction but also makes it extremely useful in assembling steel and wood panel structures in such items as store fronts, walls, ceilings, partitions, elevator enclosures, metal roofs, portable garages, factory-built homes, baked enamel structures of all types, counters, cabinets, bar fixtures, office equipment, armored booths, refrigerator or heater units, signs, bulletin boards, etc.

First described in STEEL, March 1, 1937, several developments of significance have been made in this system recently. The Permagrip method features use of a special flanged flush-mounting nut which fits into a specially prepared hole in the outer surface of the structure. As will be noted, Fig. 5, the outer surface of the structure is smooth with no evidence of the bolts. One method, Fig. 1, of applying the Permagrip fasteners consists in preparing the hole, placing the fastener in position and then laying over this the outer metal sheet which is folded around the edge of the wooden panel at the joint entirely concealing the Permagrip fastener.

Advantages of such a system are that it makes practical individual streamlining in any design, shape or size of structure without requiring expensive plant forming and die equipment. A smooth outer surface entirely free from exposed moldings, canvas fabric, outside bracing and similar obstructions is produced. In addition, joints can be filled with solder to present an unbroken surface. It completely eliminates the usual exposed heads of bolts, rivets, screws and nails. It assures unusual strength because each Permagrip fastener, although concealed, is rated to resist a strain of 3400 pounds. Used with sheet metal and laminated wood panels, a wide variety of structures is easily built with perfect streamlined surfaces.

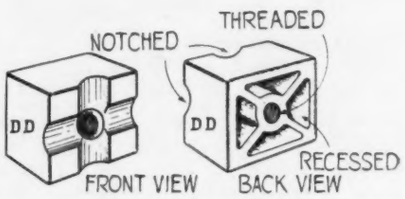


Fig. 2—Rectangular type fastener

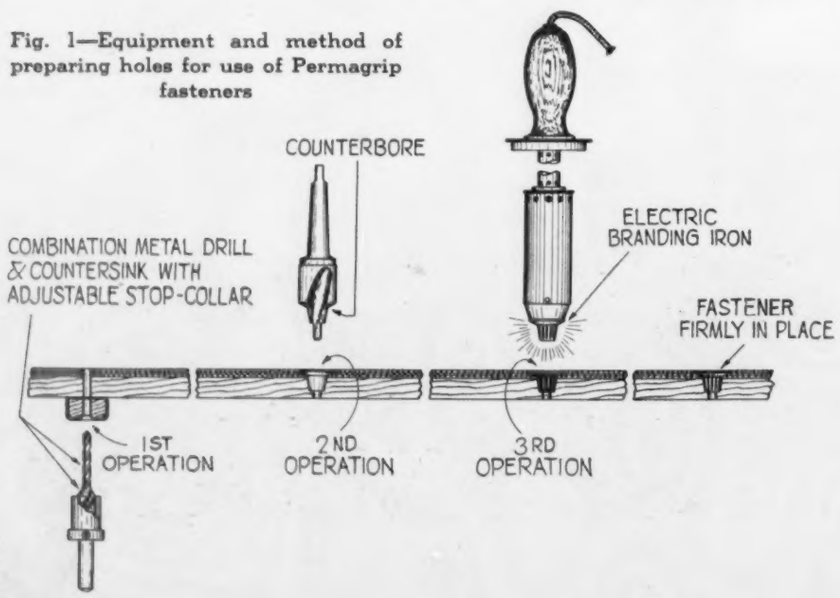
Additional advantages include the fact there are no holes in the outer metal surface to elongate through strain or vibration. Laminated plywood construction serves a double purpose. It carries load strain, insulates against heat and cold and reduces rumble noise. No load is carried by the outer metal panels. Such a construction permits unrestricted expansion and contraction of wood and metal independently, permits use of nonrusting metals, speeds up repairs and reduces original fabricating time. In addition, extra insulation can easily be inserted where desired.

Fig. 1 illustrates the procedure for applying these fasteners. First operation is a combination metal drill and countersink with adjustable stop collar which drills a hole through the joining rib and outer sheath. Second operation is to counterbore from the outside surface of the wood panel to prepare it to receive the fastener. This is done with a special counterbore which produces a hole of the required contour.

Third operation consists of branding the hole with an electric branding iron which forms the grooves

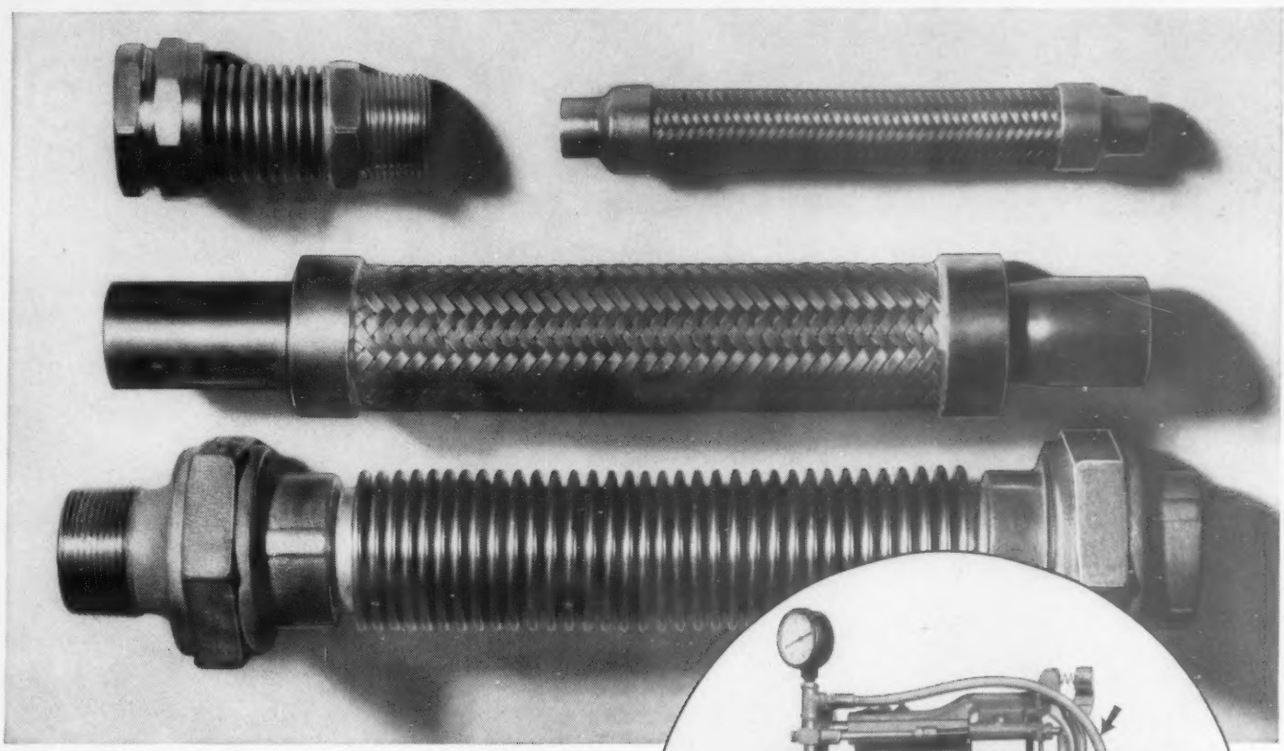
(Please turn to Page 72)

Fig. 1—Equipment and method of preparing holes for use of Permagrip fasteners



Seamless *Flexible* Connectors

...THE SAFETY LINK BETWEEN TWO MOVING PARTS



Assemblies of American Seamless Flexible Metal Tubing with various types of end fittings used as leak-proof flexible connectors for taking up vibration, misalignment, etc.

THE installation of American Seamless Flexible Metal Tubing is cheap insurance against the need for future servicing. Wherever you need a flexible connector or conductor . . . for misaligned or moving parts, for absorbing vibration . . . the one best answer lies in the use of American Seamless Flexible Metal Tubing.

There are no joints, welds, laps, seams or packing where leaks can occur. For the conveyance of air, water, oil, steam or fuel, this flexible tubing has no superior. That's why more and more designers of machinery and maintenance engineers are specifying "American Seamless."

Write us about your connector problems. Our engineering department has a wealth of information on the use of "American Seamless" on all types of machinery. Consultation of this department entails no obligation.

ANACONDA
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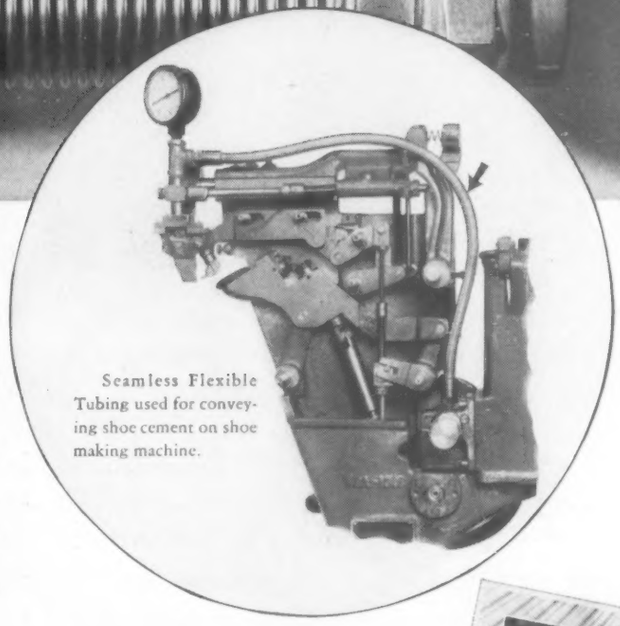

Seamless Flexible Tubing used for conveying shoe cement on shoe making machine.

FREE REFERENCE HANDBOOK ON SEAMLESS FLEXIBLE METAL TUBING

The most dependable *flexible* connector for conveying liquids or gases under high pressures...made from special *seamless* tubes of any workable metal. Handbook contains descriptions, illustrations and valuable engineering data. Write for Bulletin SS-3.

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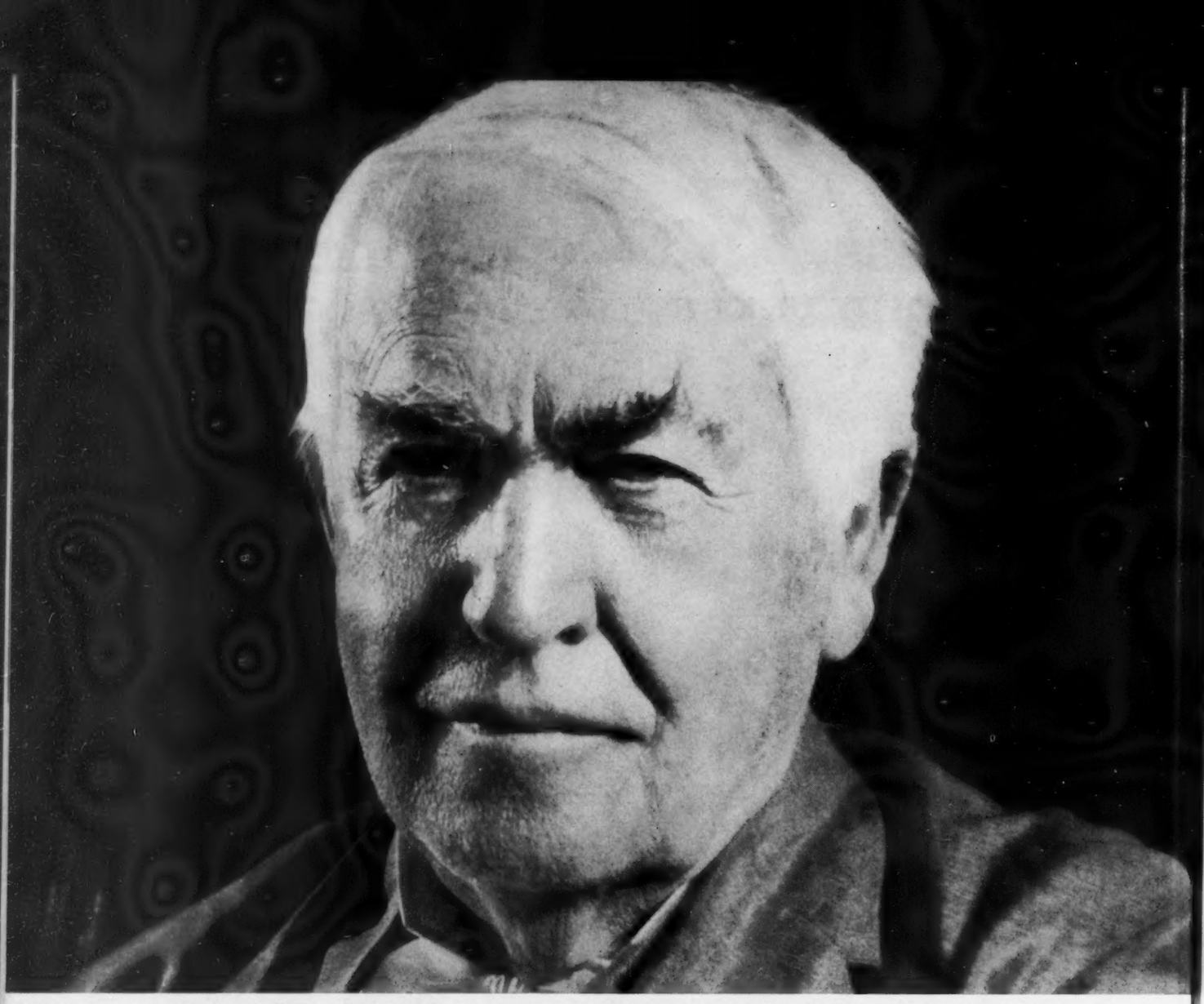


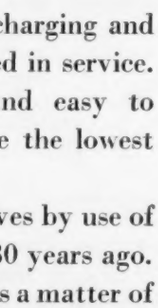
FEBRUARY 11, 1939 MARKED THE NINETY-SECOND ANNIVERSARY OF THE BIRTH OF THOMAS ALVA EDISON . . . 1847–1931

YEARS AHEAD OF HIS TIME

When Thomas A. Edison invented the alkaline type of industrial storage battery he was, as usual, years ahead of his time. It was by far his hardest invention—took much more work than the first thermionic tube, the quadruplex telegraph, the electric light or in fact any of his others. That was because he never started anything with quite so many specifications in mind.

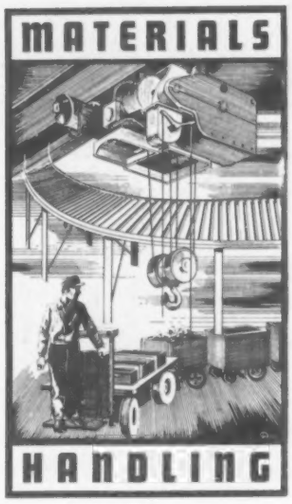
He wanted his battery to be durable mechanically, to be capable of resisting the stresses, strains, shocks and vibration of industrial truck service without injury. He wanted it to be foolproof electrically, to be able to withstand uninjured the short circuiting, reverse charging and overcharging occasionally encountered in service. His battery had to be simple and easy to maintain. His battery had to insure the lowest operating costs.

He achieved many of these objectives by use of all-steel cell construction. That was 30 years ago. That Edison succeeded in his search is a matter of record. The success of the Edison Steel Alkaline Storage Battery today is manifested by the fact that it is the preferred power source—operates in the majority of industrial trucks employed in the steel industry.



EDISON *STORAGE* **BATTERY**

DIVISION OF THOMAS A. EDISON, INC. • WEST ORANGE, NEW JERSEY



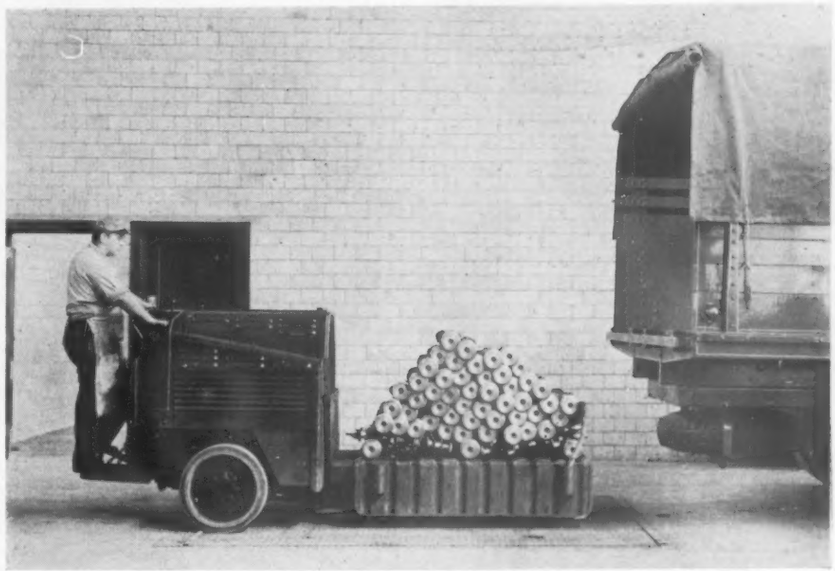
Lift Platforms

Simple application of hydraulic lift platforms speeds loading and unloading operations, does away with need for loading docks, ramps, depressed driveways or similar expensive building structures. All plant floor space available for use

■ WHEN THE Ohio Crankshaft Co., Cleveland, laid out its new Harvard avenue plant for the processing of crankshafts, much thought was given to determine the most efficient means of handling crankshafts in and out of this plant. As the building was to be erected especially for this work, any innovations to aid in efficient receipt, handling in process and shipment could be incorporated easily.

It was decided that since many of the shipments from this plant would be to or from the other Cleveland plant of this company, a large proportion of the work would arrive or leave the plant on trucks. This necessitated employing facilities to efficiently load and unload trucks and ordinarily would have meant use of loading docks, ramps, depressed driveways or similar facilities. Since it was most essential to protect the product from the elements, all receiving and shipping necessarily had to be done in the plant itself. Thus incorporation of the usual loading arrangements would have occupied a considerable floor area in the plant, not devoted to actual production. Since a large proportion of the shipments necessarily had to be handled by truck, it was decided that the plant would be arranged to handle all incoming and outgoing shipments entirely by truck rather than on a railroad siding although railroad facilities were not far away.

A rather unusual installation of



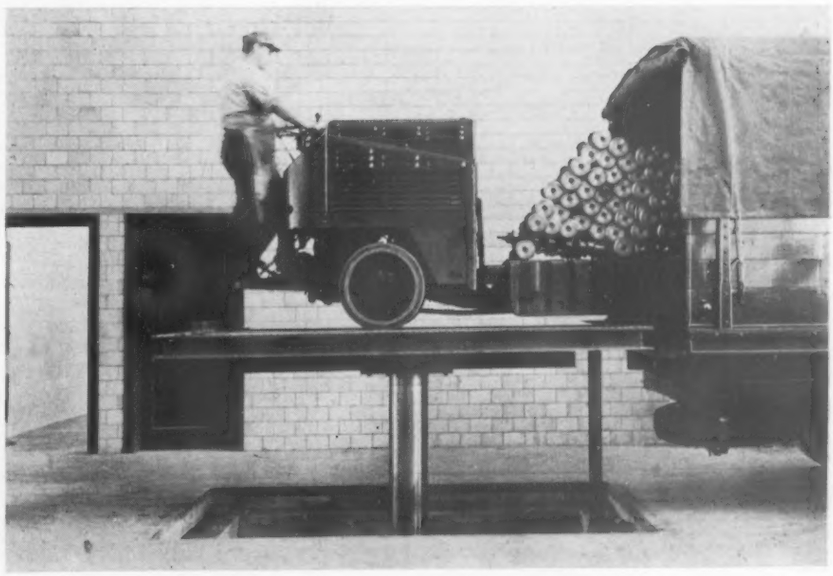


Fig. 1. (Upper)—Gasoline truck carrying skid load of finished crankshafts is run onto the lift platform when it is level with the floor as shown here. Fig. 2. (Lower)—Then hydraulic cylinder is actuated to lift platform and load up on a level with bed of truck, permitting industrial truck to deposit skid quickly

lift platforms in the loading and unloading areas of this new plant now handle these operations very effectively. The plant as finally built consists of a long rectangular structure with a number of process lines extending north and south lengthwise the building.

At the south end of the building a large area across the entire end is devoted to storage of unprocessed crankshafts as received from the forging shop. At the north end of the building is a similar area devoted to storage of completely machined, balanced and hardened crankshafts ready for assembly into engines. Processing lines extend lengthwise the building between these two areas. All unprocessed crankshafts are received at the south end where a driveway is provided for trucks to enter one side of the building, unload their contents and drive out the opposite side of the building. This avoids necessity of maneuvering trucks to unloading ramps or docks. At the north end a similar driveway is provided clear through the plant adjoining the loading area which permits the trucks to enter one side of the building, receive their load and depart from the other side of the building with no backtracking.

All the loading and unloading operations are done without use of loading docks, ramps, depressed driveways or other expensive building structures, all loading and unloading operations being handled by powered trucks in conjunction with lift platforms as shown in the accompanying illustrations.

In Fig. 1 a load of completely processed crankshafts stacked on a heavy pressed steel skid platform has been carried by the gasoline truck from the storage area to the lift platform and is ready to be loaded into the truck. In Fig. 2 the hydraulic power unit which forms part of the lift platform has been actuated to raise the piston and platform surface to the same height as the bed of the truck. A heavy steel connecting plate was then laid between the end of the truck and end of the platform and the gasoline powered lift truck with its skid load of crankshafts has started to enter the truck. It is an easy matter to place the skid load of crankshafts where desired, back the lift truck out onto the platform again, lower the platform, obtain another skid load of crankshafts and place them in the truck. All these operations are done smoothly and with considerable speed, enabling an entire truck to be loaded in short order.

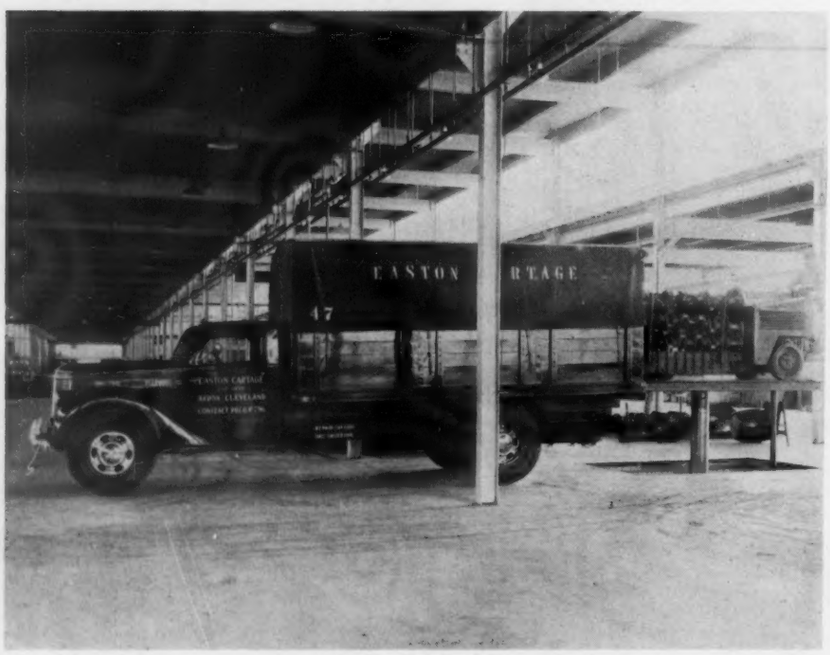
The only positioning the truck driver is required to do is to see that when he enters the plant he drives so the truck is on a line with the lift platform. This is usually accomplished with no difficulty whatever and with no assistance. One of the men in the plant usually tells the truck driver when the rear end of the truck is even with the edge of the lift platform.

Both driveways at north and south ends of the plant have two lift platforms built level with the floor of the plant so two trucks can be loaded and two others unloaded simultaneously.

Such a system for loading and unloading trucks has many advantages chief of which probably is the

(*Please turn to Page* 71)

Fig. 3—This shows even the largest of highway trucks are easily accommodated. Note wide space free for storage as only a narrow aisle need be saved for the truck. Truck drives straight through plant, does not need to maneuver in loading area



Powder Improves Ingot Practice

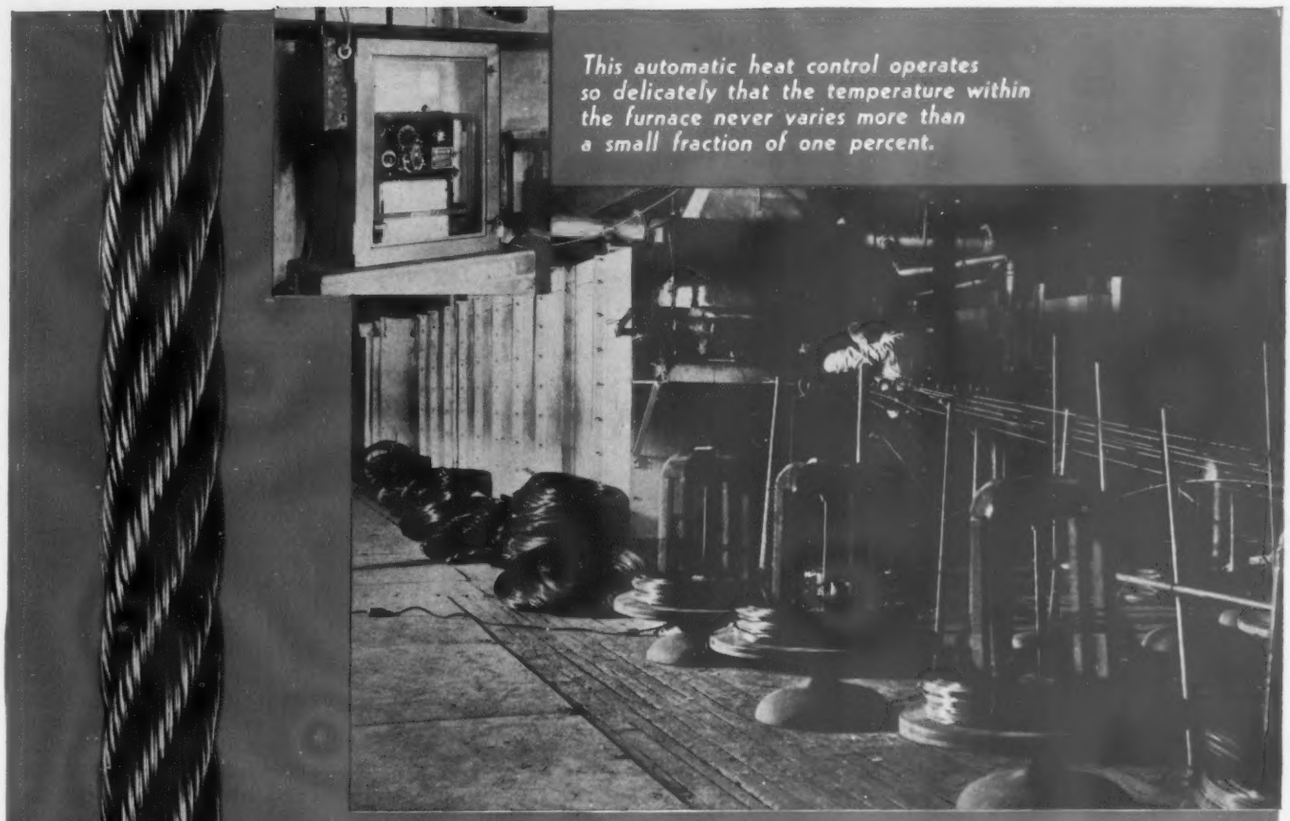
■ LAPIX, an amorphous powder originally developed on the continent and successfully used to produce quality steels in England, is now being marketed in this country by E. F. Houghton & Co., Philadelphia.

Being a nonexothermic material, Lapix acts as an insulator, supplanting a wide variety of materials formerly used to hold heat within the hot top to prevent too rapid cooling of the ingot. Straw, brick dust, limestone, coke, oat hulls, ashes, or combinations of these are replaced by the new material which is a mixture of several ingredients including silicates, with a large percentage of carbon and carbon compounds. This carbon, however, is in a form which cannot be picked up by the steel so no recarburization occurs, it is claimed. Lapix, being an inert material, does not smoke, fume or release gases or odors.

Principal advantages of using Lapix are said to be reduction in porosity and secondary pipe where such tendencies prevail, and reducing the amount of metal required in the hot top of the killed steel ingots, the latter by as much as 2 per cent or more. With only 1½ pounds needed per ton of ingot, Lapix affords adequate protection at the low cost of 6 cents per ton of ingot, it is claimed. Used extensively on killed steels, some work on semi-killed steels with good results also has been reported. No failures are known.

With the new agent, there is no bridging or formation of a crust. Lapix follows the surface of the metal down into the hot top as normal contraction takes place, thus retaining the heat within the ingot.

Being extremely fine bodied, Lapix does not mix with the steel but floats on top of the molten metal. In Europe where back pouring is employed, the material is often added following the initial pour. In America, however, the entire ingot is usually poured at once and the powder added as soon as the nozzle is closed. Since no laboratory control or exact measurement is necessary, a scoop holding the required amount is used by the ladle gang in adding Lapix to the poured ingot. No stirring or mixing is required.



This automatic heat control operates so delicately that the temperature within the furnace never varies more than a small fraction of one percent.

YOUR ROPE COSTS ARE DETERMINED IN OUR PATENTING FURNACE

BUILDING LIFE INTO WICKWIRE ROPE "BEYOND SPECIFICATIONS" . . . . .

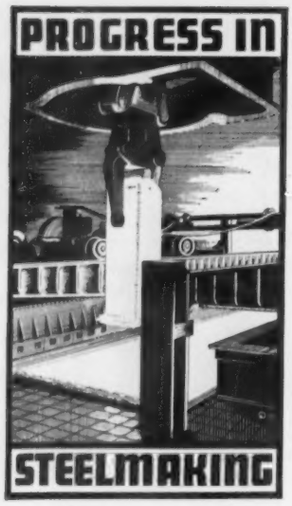
To fully appreciate the importance of control in heat treatment of rope wire, the user of rope must consider the value to him of consistent rope performance. In the patenting furnace are built the structures that give a rope long life, freedom from fatigue, and uniformity. Variations in temperature materially change these characteristics. Therefore Wickwire Spencer has spared no expense in determining what the proper temperatures should be and in equipping their furnaces with automatic controls that eliminate the unreliability of hand operation.

WICKWIRE ROPE

It is still the privilege of the progressive manufacturer to build rope life into his product beyond official specifications.

WICKWIRE SPENCER STEEL COMPANY

General Offices: 41 East 42nd Street, New York City; Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Portland, Seattle. Export Sales Department: New York City



Modern Slabbing Mill

New 45 x 80-inch reversing-universal unit handles ingots up to 45,000 pounds, produces slabs up to 8 x 60 inches x 20 feet. Horizontal rolls use 10,000 horsepower, verticals 3000. Vertical rolls are symmetrical, can be changed quickly

■ TO EMPLOY most efficiently the great blast furnaces and steelmaking capacity of the Edgar Thomson works and to increase the slab producing capacity of this plant, Carnegie-Illinois Steel Corp. has installed what is claimed to be the world's largest slabbing mill. In addition to its size it has a number of interesting departures from conventional design to increase efficiency of operation and quality of products.

When it was decided to use the Edgar Thomson works as a source of slabs for the new Irvin works, a careful study of performance records of existing slabbing mills was made to permit selecting the type best suited for requirements of this plant. Most slabs fed to continuous strip mills are produced on conventional 2-high reversing blooming mills. In addition, a considerable tonnage of blooms are usually rolled on the same mill. Where maximum slab width does not exceed 4 feet or where the tonnage requirement is moderate this type of mill is no doubt the best commercial choice.

The mill for the Edgar Thomson works, however, was designed by United Engineering & Foundry Co., Pittsburgh, primarily as a slabbing mill, although it can be used for rolling blooms by substituting grooved rolls for the flat cylindrical ones. Since slabs up to 60 inches in width were to be rolled, it was decided that a universal slabbing mill with powerful vertical rolls would best meet the requirements. With a capacity exceeding anything heretofore attempted, design of the vertical mill had to be attacked from a new angle.

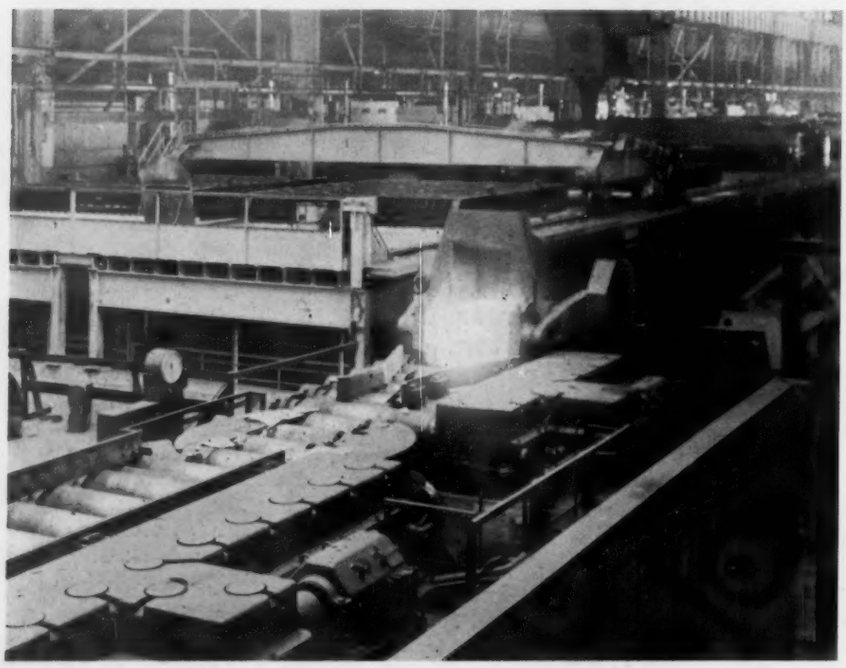
Usual practice is to drive vertical rolls through gears keyed to the vertical roll. This, however, makes it difficult to give the drive the required strength, makes roll changing difficult and permits gears to get out of alignment.

Drive Is Separate Unit

On the new mill the drive for the vertical rolls forms a separate unit which consists of a combination of bevel and single helical spur gears. These form separate and fully enclosed, oil tight, gear units with all shafts mounted in roller bearings. The driving bevels are mounted on hollow steel shafts with machined flutes on the inside, similar to those on coupling boxes. This assures positive mounting and reduces the driving shaft to essentially a spindle subject to torsional stresses only. Coupling boxes of special design connect the vertical rolls with the drive. This and other features insure a complete and convenient way of changing rolls. It gives a perfectly symmetrical form to the vertical rolls and so permits them to be turned end for end, a feature which is expected to reduce roll cost considerably.

Thus engineering of this mammoth mill was new from start to finish. Central oil and grease systems operate automatically. All auxiliary units are motor operated. Hydraulic systems, except for cooling and descaling, have been avoided.

Each of the two 45 x 80-inch horizontal rolls is driven by a 5000-horsepower motor, the vertical



Looking toward soaking pits. Ingot buggy is depositing ingot on receiving table

rolls by one 3000-horsepower motor. The vertical mill motor is located in the mill building. It is mounted on a structure built from heavy H-beams and plates. Except for the air ducts built into it, this box-like tower was filled with concrete to avoid vibration. The removable house over this motor connects to the main motor house so motor comes in contact with filtered air only. The connected load of all auxiliary motors totals over 5500 horsepower.

Screws of the horizontal rolls, the front and back mill tables, the manipulator and the slab shear are operated by Ward-Leonard variable voltage control.

Path of material through the mill may be traced as follows: Large overhead cranes pick up the ingot, a massive block of steel as large as 32 x 66 x 90 inches and weighing up to 45,000 pounds, from the white hot soaking pits at the east side of the mill. Crane deposits ingot into a huge cast steel pocket called the "ingot pot," hinged in a large, one piece, cast steel carriage. This carriage has three axles mounted in roller bearings with 75-horsepower railway type motors driving two of the axles. This assembly, over 26 feet long, with its load weighs close to 250,000 pounds and travels on a track built of specially rolled rails heavier than the heaviest railroad tracks. This mammoth "ingot buggy" carries its glowing load toward the ingot receiving table where the ingot pot is tilted automatically to deposit the ingot on the table.

Table Turns Ingots

Receiving table carries ingot to a short table mounted on a revolving frame which permits turning the ingot end for end when desired. Circular track of this turntable rests on beams of a scale which automatically registers the weight of every ingot passing over it. Other roller tables then bring the ingot to the slabbing mill.

The 45 x 80-inch rolls of the slabbing mill have been opened wide and adjusted to give the ingot, which arrives on its narrow side, a heavy bite causing the scale to crack and fall off. Usually two more passes are given before the ingot is laid on its flat side by a powerful manipulator. The side guard manipulator, one of the largest ever built, performs its duty speedily and almost noiselessly.

Now the vertical rolls come into play. Together with the horizontal rolls, which in the meanwhile have been lowered, they knead the steel until it has been reduced to the proper section which ranges from 2½ to 8 inches in thickness and up to 60 inches in width.

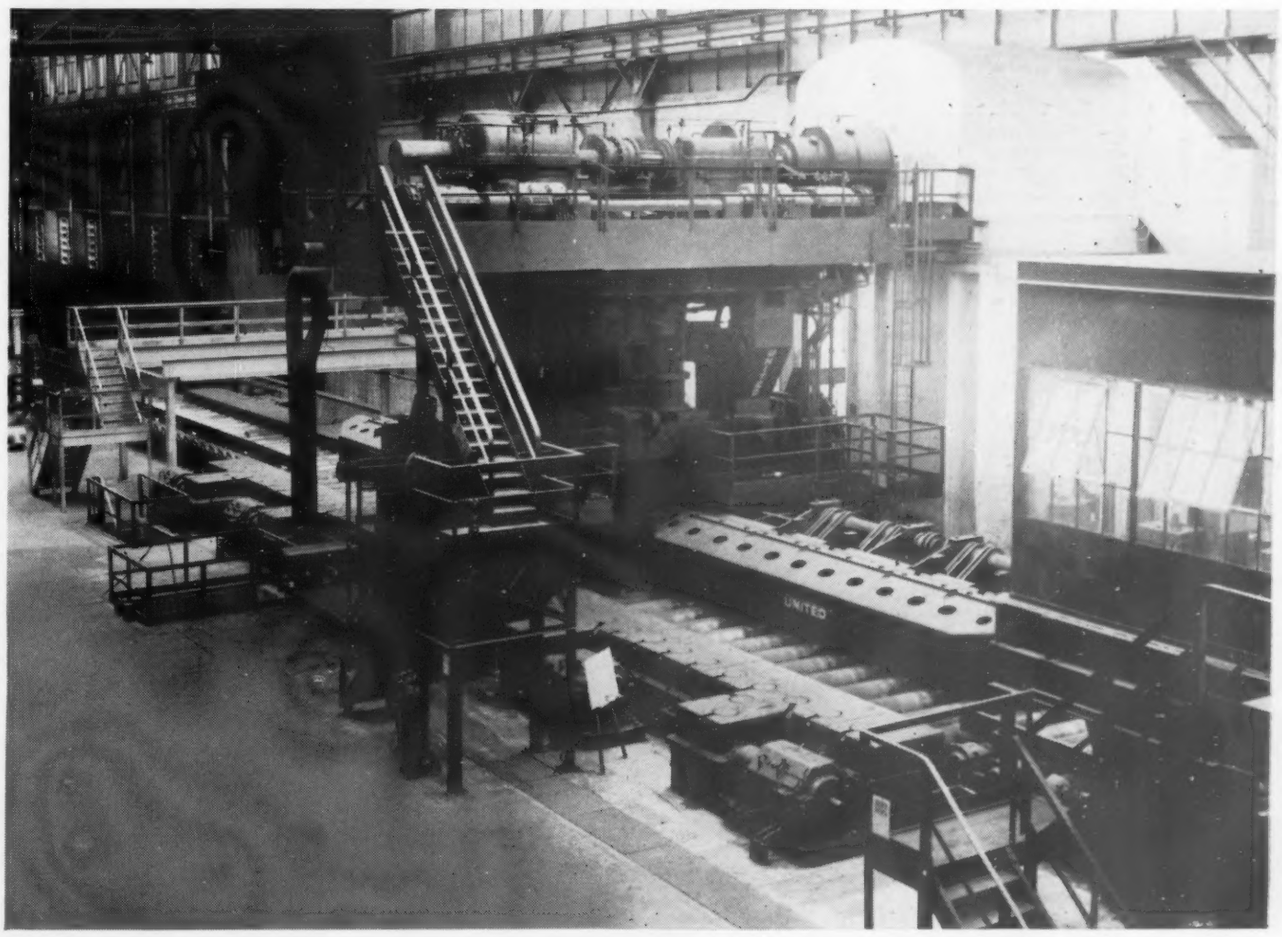
Vertical roll opening is 80 inches so slabs somewhat wider than 60 inches can be rolled. Sometimes it happens that the slab finishes somewhat cambered. Then the powerful side guards squeeze the slab so it will be straight as it moves on to the shear. This shear, with 1200 tons maximum knife pressure, first crops the slab, then divides it into proper lengths. Shear is a patented "down and upcut" type and is driven by two 350-horsepower motors.

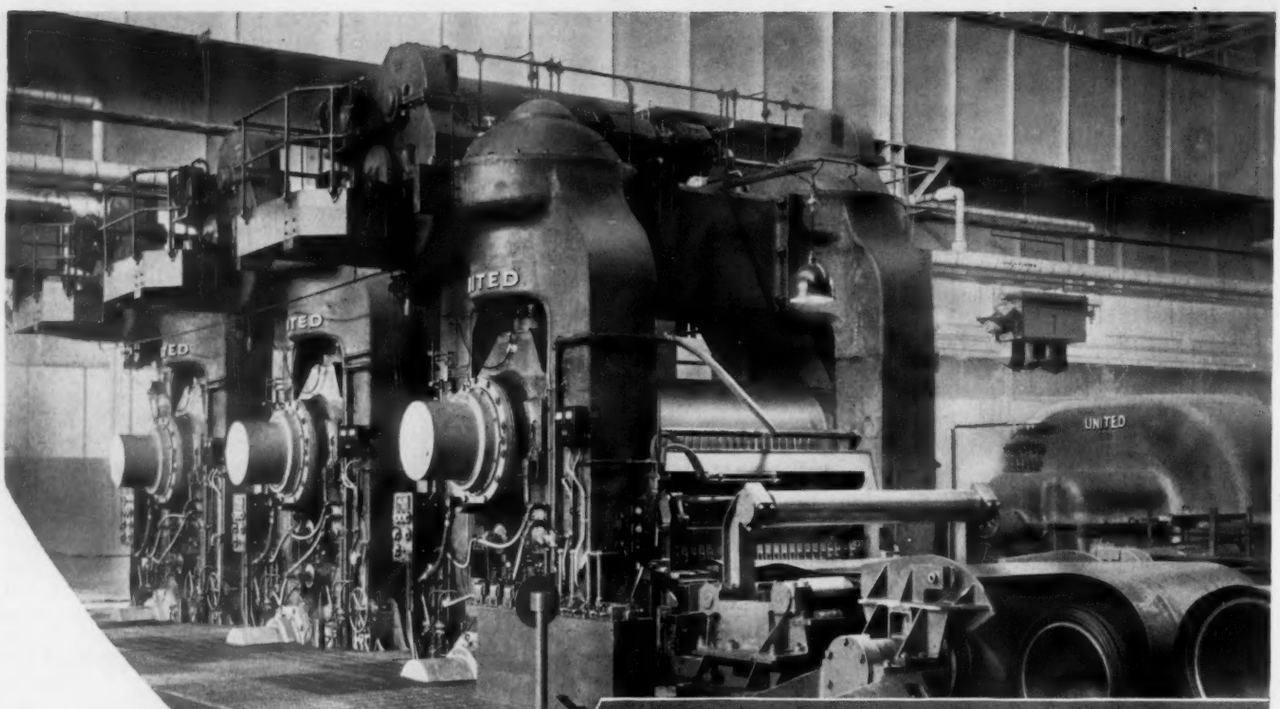
The adjustable stop is of extra heavy design. So is the screw, 12 inches in diameter, and the two side rails which take the impact of the oncoming steel and transmit the load to heavy cast steel stands. No impacts are transmitted to the shear. By removing two wedges, the whole gage may be removed for access to the machinery below.

Crops are pushed through the shear, slide down a chute and land on a conveyor which transfers them into special cars outside the building.

Shear delivery table is a shuttle table with a gap adjacent to the

Slabbing mill from pulpit side and looking toward soaking pits

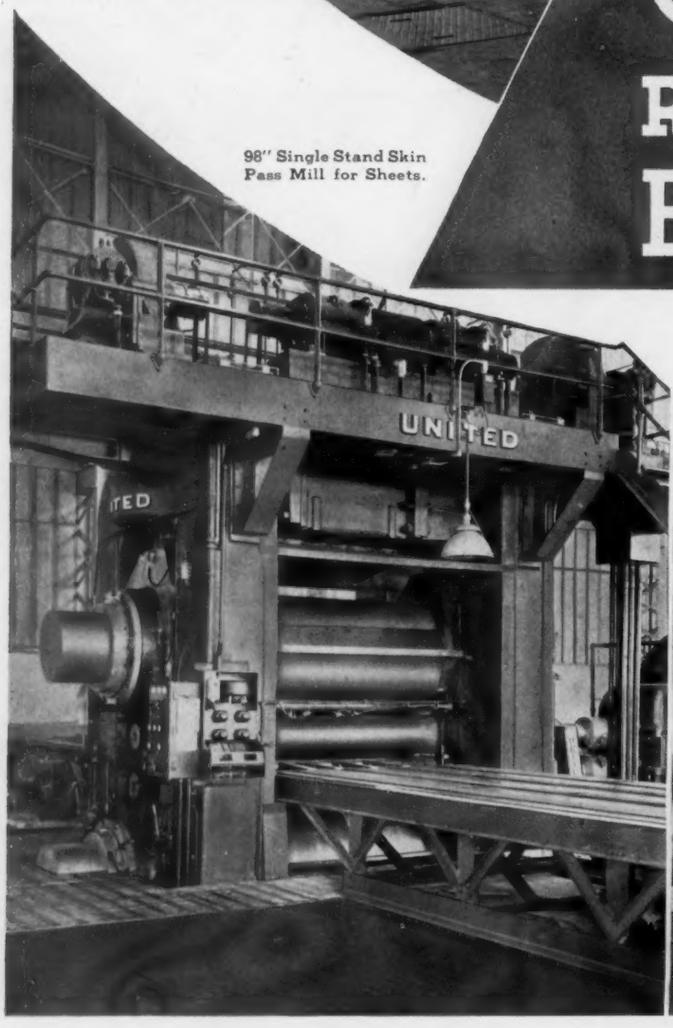




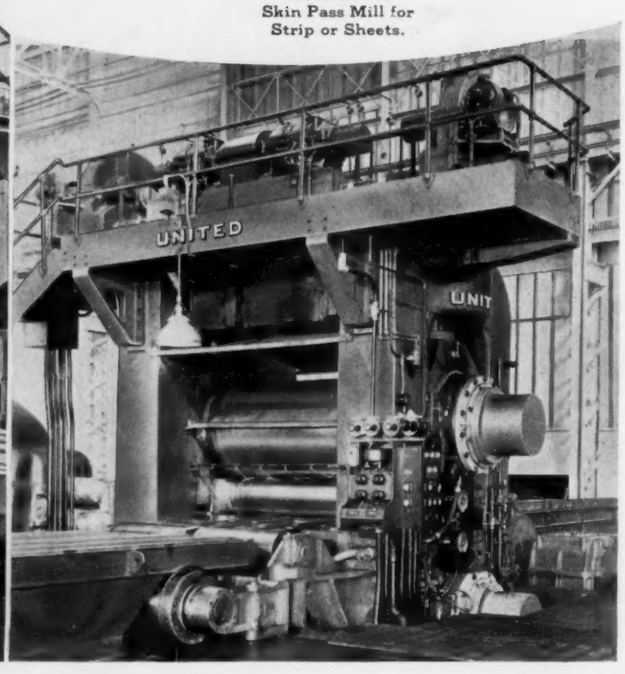
98" 3-Stand Tandem Cold Mill with Automatic Uncoiler.

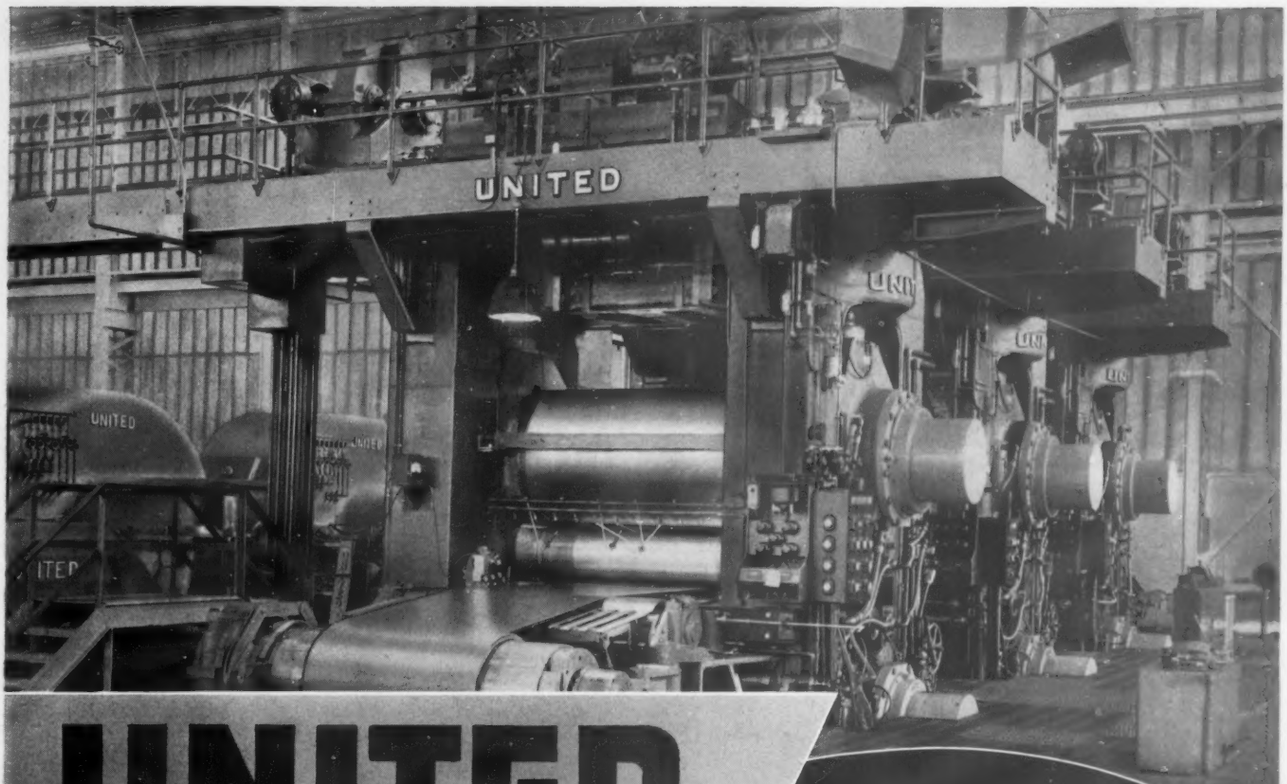
Complete ROLLING MILL EQUIPMENT

98" Single Stand Skin Pass Mill for Sheets.



Combination Skin Pass Mill for Strip or Sheets.





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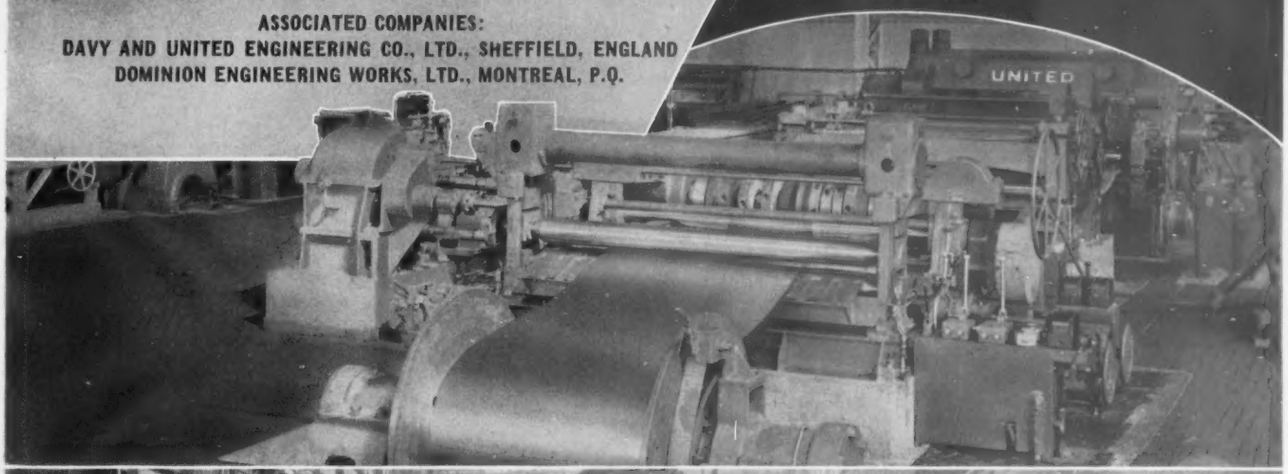
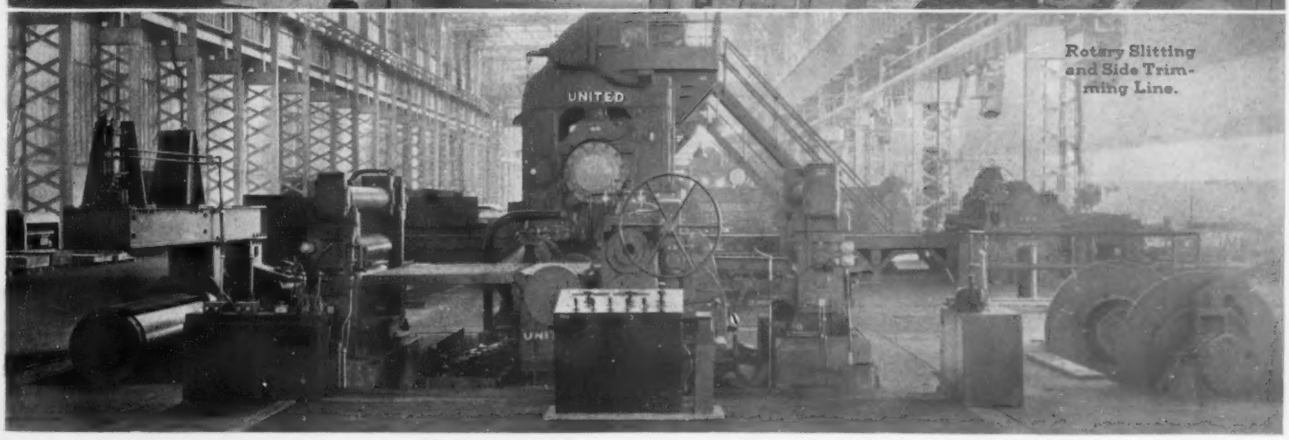
98" 3-Stand Tandem Cold Mill Delivery End.

Drum Type Flying Shear Line.





Rotary Slitting and Side Trimming Line.

shear to let the crops fall through. By shifting the shuttle table, this gap may be closed to permit short pieces to pass over the shear delivery table. In some installations, sacrifices are made to permit short pieces to pass over the table. However in this installation rollers are closely spaced and are driven by two lineshafts with separate motor drives. Though somewhat more expensive initially, it creates an extremely rugged design.

To assure ample strength and to avoid additional costs in handling short slabs, it was decided to design all tables and piling equipment back of the shuttle table for a minimum slab length of 5 feet. Maximum slab length normally is 20 feet but pieces up to 30 feet may be handled.

Shuttle table back of the shear fulfills three purposes: First, it creates a gap back of the shear for the disposal of crops. Second, it forms a gap back of the shuttle table so short blooms may fall into a bucket or a bloom conveyor, should it become desirable at a future date to produce short blooms on the mill. Third, the shuttle table may be kept in an intermediate position so gaps on either side of it will be equal and slabs as short as 5 feet can then pass over them.

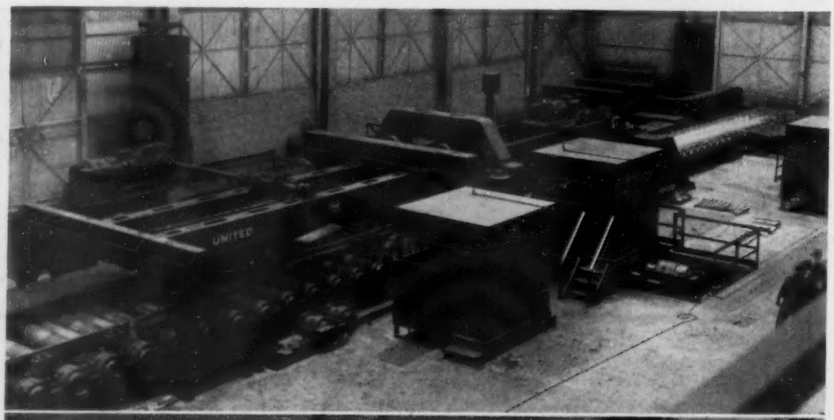
From shuttle table, slabs go to a table with a built-in test scale. This unit is equipped for automatic recording, the same as the ingot scale mentioned above.

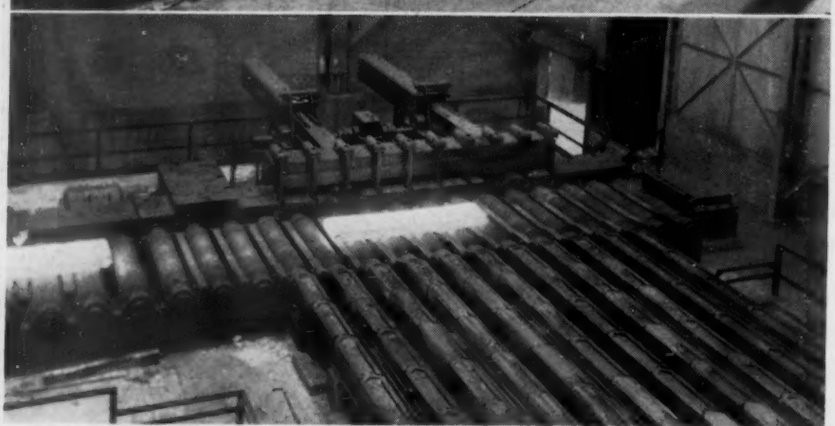
A motor-operated pusher moves the slabs onto a transfer over which they travel to piler tables in the slab storage. Slab transfer is of the reciprocating type with automatic ducking dogs. Special care was taken in designing this transfer to avoid warping and other distortions which might result from heat of the slabs handled.

Slab storage building is roofed over and contains unusually ample facilities for light and ventilation, together with protection from rain and snow. An existing hot-metal trestle intersects the slab storage so there are two slab storage and shipping buildings, each 115 feet wide and 364 feet long and each with two 30-ton cranes. The crane runway connects both buildings so cranes may pass from one to the other.

Four slab pilers are provided, two for each storage building. They are of the screw operated elevator type for forming the pile. Motor operated rack type pushers move the slabs onto the platen of these elevators, one slab on top of another, until the desired load is accumulated. Then another pusher moves the pile onto stationary skids from which they are removed by chain slings and crane.

Top, slab shear with crop pusher and gage. Slabs pass to the right to slab runout table and slab transfer at extreme right. Center, slab transfer unit employs extremely sturdy design as shown here. Bottom, slab piling equipment utilizes clean cut, heavy construction





Manual of Pattern Making Is Revised

■ *Pattern Making,* by James Ritchey; cloth, 233 pages 5 x 8 inches; published by American Technical society and supplied by STEEL, Cleveland for $2; in Europe by Penton Publishing Co., Caxton House, Westminster, London S. W. 1.

Originally prepared by James Ritchey several years ago, the book has been revised and brought up to date by Walter M. Munroe, instructor in patternmaking, Worcester Polytechnic institute, Worcester, Mass.; Charles W. Beese, industrial engineer, Armstrong Cork Co., and formerly head, department of industrial engineering, Pennsylvania State college, State College, Pa.; and Philip Ray Hall, assistant professor of industrial engineering, Pennsylvania State college.

The work reflects the background of the original author and the revisors, who have had exceptional experience not only in practical work but also in teaching the subject for many years. Practically every feature involved in the construction of wood and metal patterns for use in the foundry is covered under the following headings: Practical requirements, working mediums, hand cutting tools, measuring tools, small tools, machine tools, molding practice, typical patterns, metal patternmaking. The book is profusely illustrated with 350 figures.

Ohio Ferro-Alloys Corporation

Canton, Ohio

Tractor Hood Dies

Use of a cast-to-shape alloy makes possible significant savings in machining time on large dies. Also cost of raw material for dies is reduced. More economical design of dies is permitted by this alloy

By LOUIS J. NOBLE
Sales Manager
Advance Foundry Co.
Dayton, O.

■ DAYTON Tool & Engineering Co., Dayton, O., recently designed and built some interesting drawing and forming dies for a leading farm tractor manufacturer.

Fig. 1 shows two dies of the pressure ring type. The entire working surfaces of these dies are made of cast-to-shape Strenes metal, a product of Advance Foundry Co., Dayton, O. Punches and forming pads are not heat treated, but the die and draw or pressure rings are hardened and ground. The rings also are of Strenes metal. Total weight of the first draw die is 5900 pounds and weight of second draw die is 11,000 pounds. In both of these there is approximately 5000 pounds of Strenes metal.

On this application Strenes metal lowered die costs three different ways: First, the cost of the raw stock, a chromium-molybdenum-nickel alloy, was less than conventional die material. Second, the metal was cast to shape, eliminating a large amount of machine work and excessive stock removal. Third, by using a continuous ring and cast-to-shape construction on die, punch, pad and draw rings, it was not necessary to machine details all over as is required with conventional type dies.

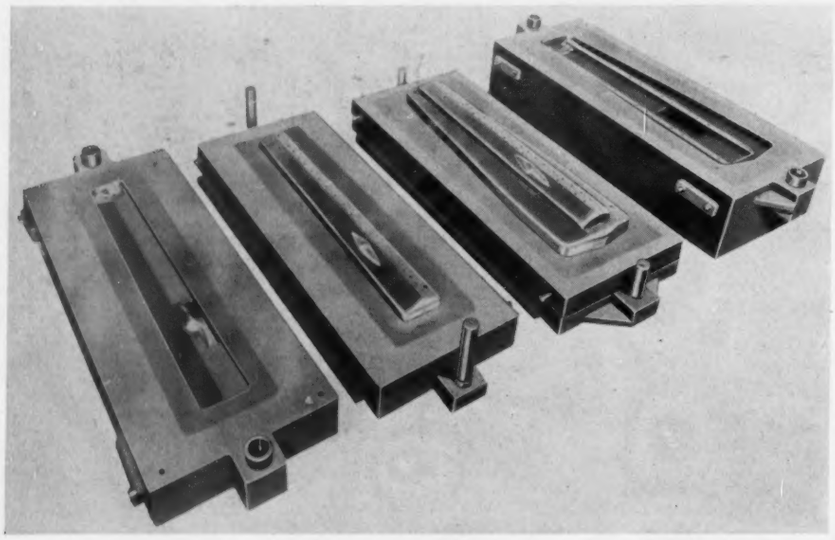
In the case of the two dies shown in Fig. 1, the above savings amounted to approximately 25 per cent and the die manufacturer believes this a conservative figure.

In Fig. 2, a cam return flange die is shown. In front of it is a stamping it has produced. In this instance the collapsible die, pressure pad and cam blocks are Strenes metal. These items were not heat treated but were left as cast. This die has a total weight of 17,000 pounds, 75 per cent of which is Strenes metal. Total savings in this die are estimated at 33 1/3 per cent.

In the case of the two draw dies shown in Fig. 1, it is estimated that 200 hours of machining time was saved by casting the metal to shape. These two dies are used for the first and second draws in making the tractor hood top. The other die shown in Fig. 2 is used for the sixth operation in making these hood tops. On this die, it is estimated 500 hours of machining time were saved by casting the metal to shape.

The material handled by these dies is 0.036-inch hot rolled, annealed

(*Please turn to Page* 71)



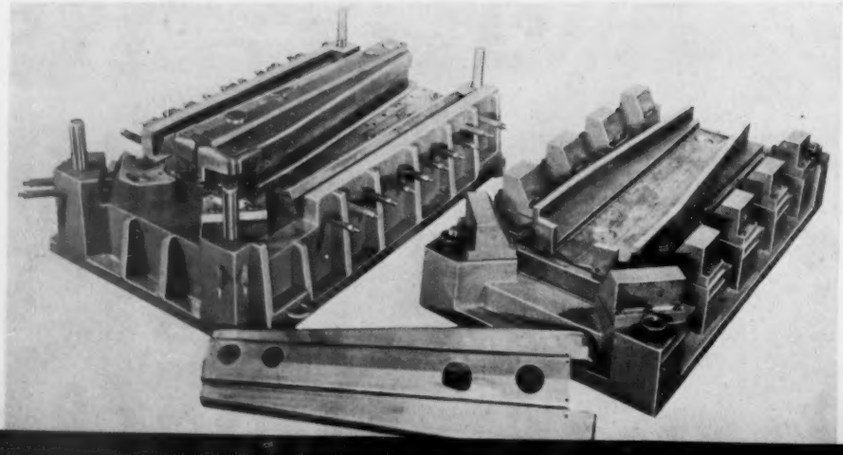
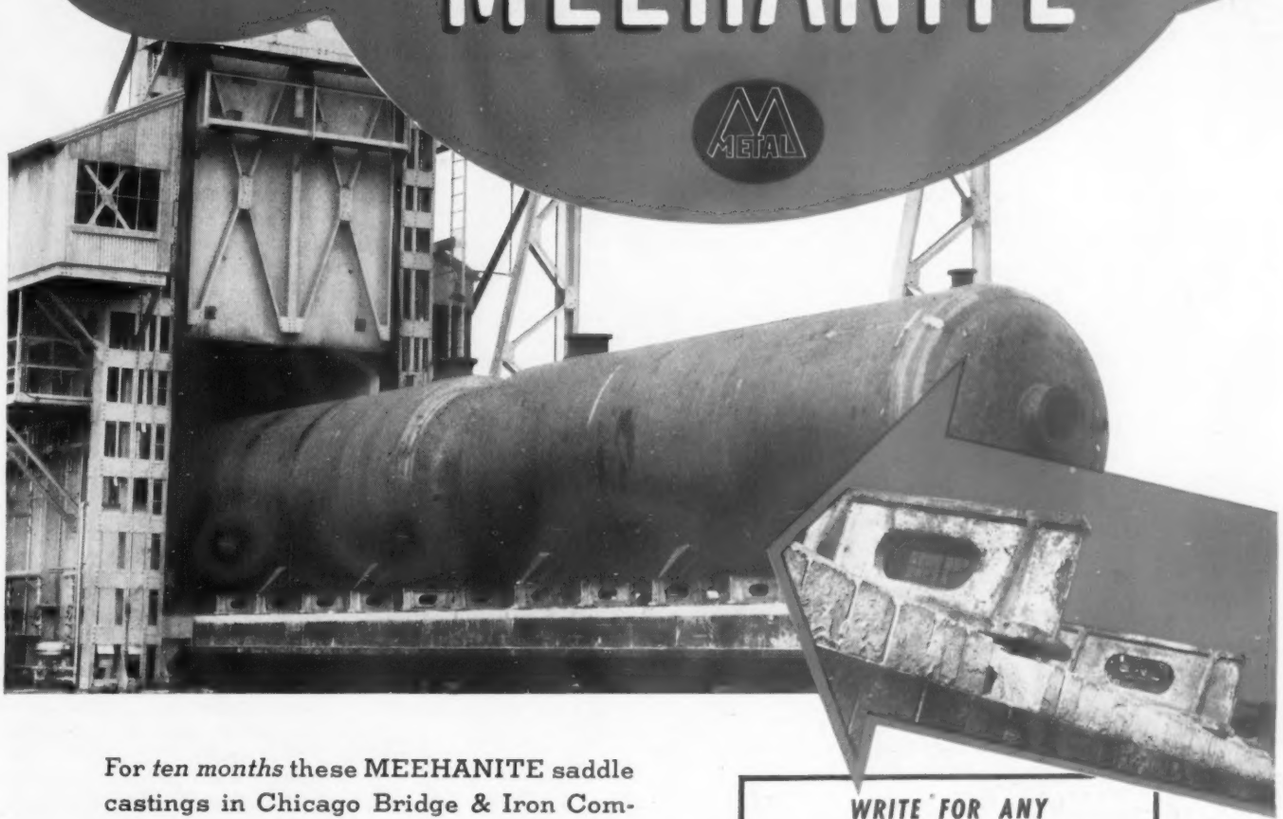


Fig. 1. (Upper)—Two dies of the pressure ring type. Entire working surfaces of these dies are made of cast-to-shape Strenes metal. Fig. 2. (Lower)—The collapsible die, pressure pad and cam blocks of this cam return flange die are Strenes metal

AMAZINGLY DEPENDABLE...

HEAT RESISTING CASTINGS OF MEEHANITE



For *ten months* these MEEHANITE saddle castings in Chicago Bridge & Iron Company's Stress Relieving Furnace at Birmingham, Ala. have been withstanding *six hour heats at 1200° F.* with no signs of distress—evidence of real dependability.

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Greenlee Foundry Company	Chicago, Ill.
Cincinnati Grinders Incorporated	Cincinnati, Ohio
The Cincinnati Milling Machine Co.	Cincinnati, Ohio
Fulton Foundry & Machine Co.	Cleveland, Ohio
The Stearns-Roger Mfg. Co.	Denver, Colo.
Atlas Foundry Co.	Detroit, Mich.
General Foundry & Mfg. Company	Flint, Mich.
Hamilton Foundry & Machine Co.	Hamilton, Ohio
Barnett Foundry & Machine Co.	Irvington, N. J.
The International Meehanite Metal Co., Ltd.	London
Kinney Iron Works	Los Angeles, Calif.
Koehring Company	Milwaukee, Wis.
Cooper-Bessemer Corporation	Mt. Vernon, Ohio
Vulcan Foundry Company	Oakland, Calif.
E. Long, Ltd.	Orillia, Canada
M. H. Detrick Co.	Peoria, Ill., Newark, N. J.
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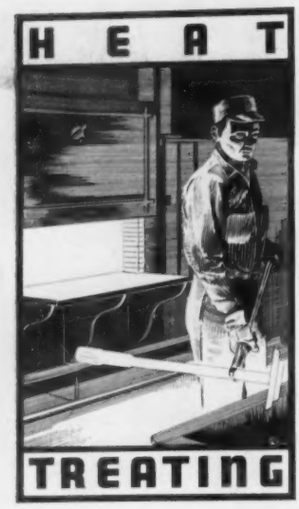
Warren Foundry & Pipe Corp.	Phillipsburg, N. J.
Meehanite Metal Corporation	Pittsburgh, Pa.
Rosedale Foundry & Machine Co.	Pittsburgh, Pa.
American Laundry Machinery Co.	Rochester, N. Y.
Banner Iron Works	St. Louis, Mo.
Valley Iron Works	St. Paul, Minn.
Australian Meehanite Metal Co., Ltd.	Waterloo, N. S. W.



Bolts and Nuts

Plant produces parts heat treated to great accuracy. Automatically controlled system cools quenching oil to maintain uniform bath temperature, eliminating that variable

■ AT PLANT of National Screw & Mfg. Co., Cleveland, the heat treating and metallurgical control forms an extremely important function in producing some 11,000 standard items carried in stock as well as more than 13,000 special items fabricated during one year.

In this one plant alone more than three billion pieces were fabricated in 1937 to produce 21,000 tons of finished products. Practically every conceivable type of machine screw as well as wood and sheet metal screws, cap screws, carriage bolts, studs, cotter keys, rivets, tacks, nails, wing nuts, machine screw nuts, etc. are made by some 6000 machines in an area of approximately 675,000 square feet.

A power plant, consuming 406 cars of coal a year, furnishes heat and electric power. Bolt and screw machinery includes 250 cold headers, 23 trimmers, 48 thread cutters, 148 roll threaders, 33 pointing machines, 245 slotters, 289 shavers and 855 gimlet pointing machines for wood screws.

With such a wide range of products, processes and production machines, this plant has an enviable record of "practically no scrap from incorrectly heat treated material." This is made possible by extremely accurate metallurgical control on raw material and heat treating procedures. An accurate analysis of each heat of steel entering the plant accompanies the rod through all fabricating operations. By referring back to previous results on similar material, accurate control can be obtained. By holding limits to the high side, any corrections necessary can be handled by a little additional drawing, otherwise two operations would be necessary for correction.

Large proportion of the material is an open grain, S.A.E. 1035 steel, oil quenched. About 70 per cent of the heats run between 0.35 and 0.40 per cent carbon with 0.65 to 0.85 per cent manganese, a 20-point spread instead of the 30 points permitted by S.A.E. specifications. Phosphorus is held below 0.040 and sulphur below 0.050 instead of the S.A.E. limits of 0.045 and 0.055 respectively. The steel is not rimmed, usually being a silicon killed steel with 0.10 to 0.15 per cent silicon.

Operations are spread over three buildings. In the first, incoming rod is treated and has surface prepared for cold heading. A suitable finish is produced by drawing the pickled and limed rods through a mixture of two parts lime, one part calcium stearate, and one part aluminum stearate. The resulting finish serves as an excellent lubricant for all types of subsequent cold heading operations.

Physical properties of the finished wire are held to rather close limits by controlling the drafting practice. Rod annealing and intermediate annealing between drawing operations frequently are used so finished wire will be of proper temper to afford maximum fabrication efficiency.

In a second building is a group of 67 large cold heading machines

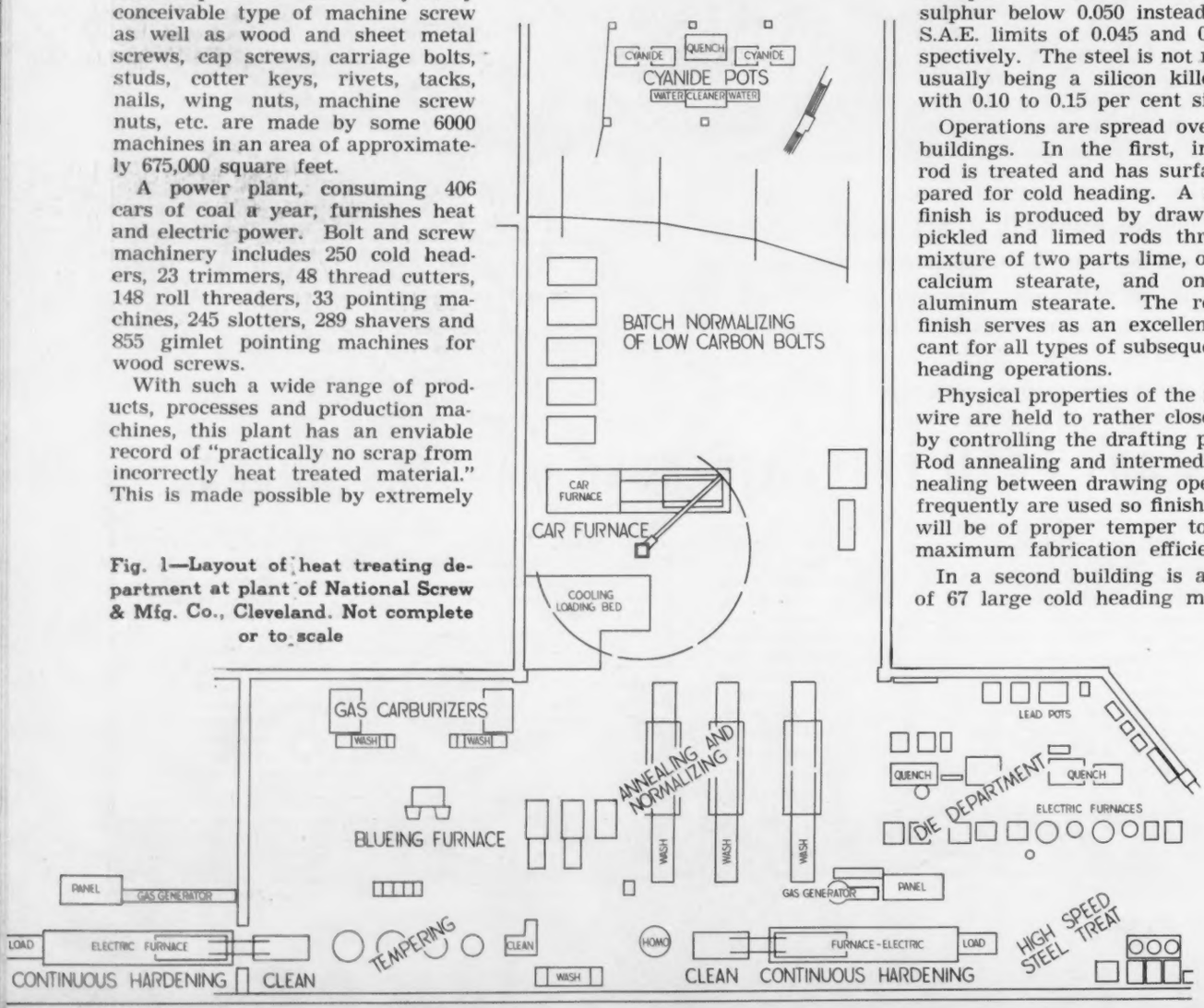
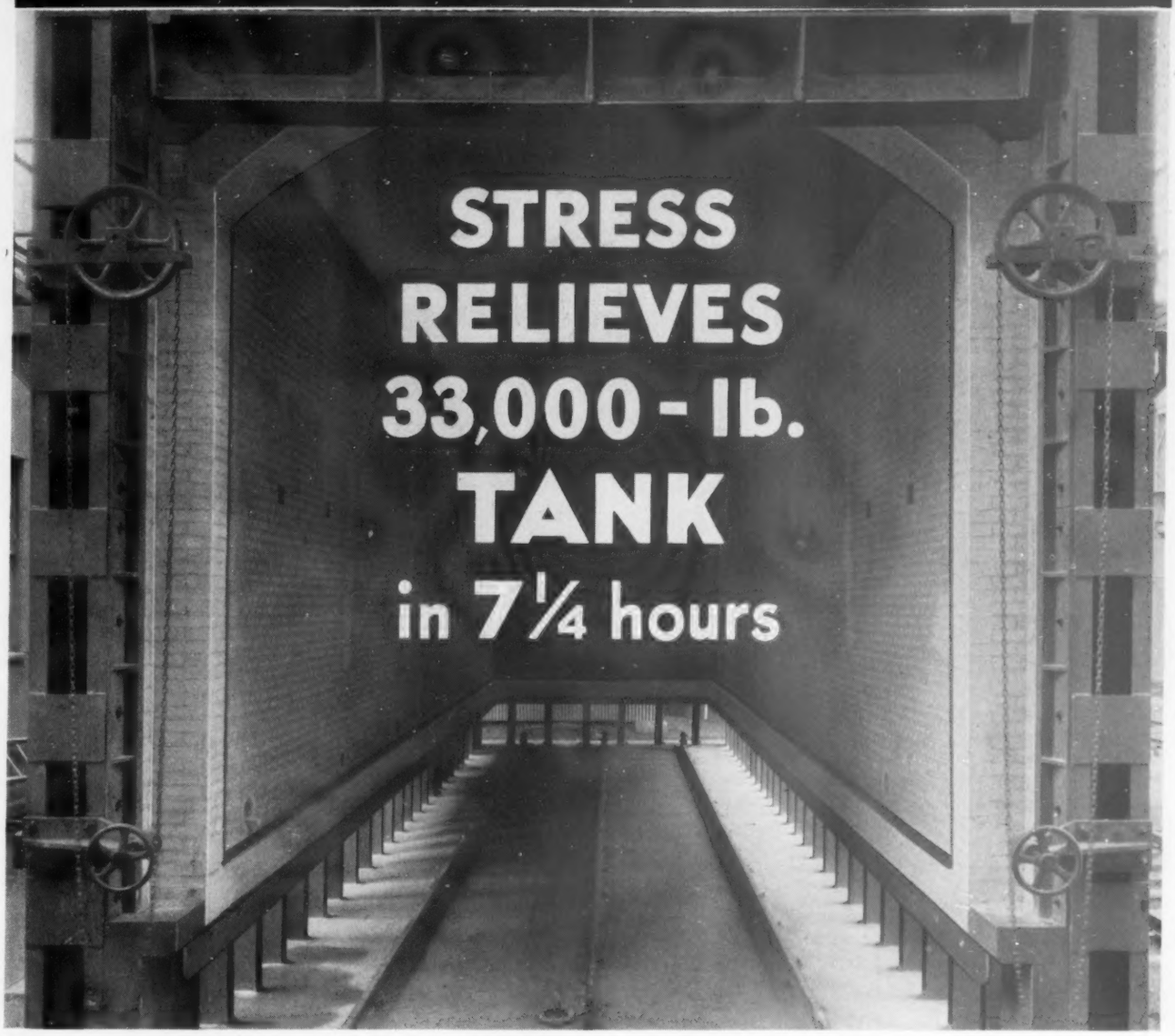


Fig. 1—Layout of heat treating department at plant of National Screw & Mfg. Co., Cleveland. Not complete or to scale

A.C.F USES B & W INSULATING FIREBRICK



Car-bottom stress-relieving and annealing furnace at American Car and Foundry Company, Milton, Pa. plant. Constructed of B&W Insulating Firebrick; designed and built by Morris Engineering Company of Philadelphia.

Significant Facts

Furnace dimensions (inside): 47½ ft. by 13 ft.; 17 ft. 3 in. high.
Side walls and end wall: 13 in. B&W Insulating Firebrick.
Arch and door: 9 in. B&W Insulating Firebrick.
Car top: 3 in. B&W Insulating Concrete, covered by 7½ in. B&W Insulating Firebrick and paved with 4½ in. dense firebrick.
Typical job: Chlorine tank, 33,000 lb., annealed at 1550 F.
Total annealing time, including heating up and cooling: 7¼ hours.

Superior Performance, with B & W Insulating Firebrick

B&W Insulating Firebrick were selected for this and other up-to-date stress-relieving furnaces because of their high insulating value and low heat-storage capacity—resulting in a short cycle and low fuel consumption. Other features include resistance to spalling and high load-bearing properties.

Technical data will be gladly sent upon request
The Babcock & Wilcox Company . . . Refractories Division . . . 19 Rector Street, New York, N. Y.
R-82

BABCOCK & WILCOX

which include solid and open die headers, and rod headers. A considerable number of these are two and three-stage headers. Recently several machines have been installed which cut the blank from the wire, upset the head, trim, point, and roll the threads on the bolt all in a continuous series of operations to turn out a complete bolt with no further machining necessary.

In the third or main building, headers and trimmers are on the first and second floors, thread rollers on the third, with machine screw products, slotters, pointers and miscellaneous equipment on a fourth floor. Fifth floor is devoted to heat treating. Sixth and seventh floors contain engineering, production and sales offices.

Handled in Tote Boxes

Handling throughout the plant is mainly in steel tote boxes. These are carried about on skids by electric trucks. A fourth building contains a large electroplating department where machine screws, bolts and nuts are given various finishes including plating with cadmium, brass, copper, zinc, chromium or nickel.

Fig. 1 shows layout of heat-treating department. Here special attention has been given to place equipment so maximum ventilation can be obtained. This wing of the building has windows on all sides and ceiling is two stories high in main portion of the department permitting heat to rise away from the working level. This guards against excess heat even in the hottest weather.

Fig. 2 shows one of the two continuous, electrically heated, hardening furnaces. Each has a continuous chain belt hearth, 2-zone control and a capacity of 1000 pounds per hour.

Two separate atmosphere generators, one for each furnace, furnish atmosphere gas which prevents oxidizing or carburizing of material in the hardening furnaces. One of these prepared atmosphere machines is of sufficient capacity to supply both furnaces and so permit overhauling of one generator without interrupting peak production of the furnaces. Large gas generator produces 2000 cubic feet per hour and the small one has 1000 cubic feet per hour capacity but is capable of 2000 cubic feet per hour for short time intervals. Gas analysis is controlled to give bright or dark finishes as may be desired for various types of product being treated.

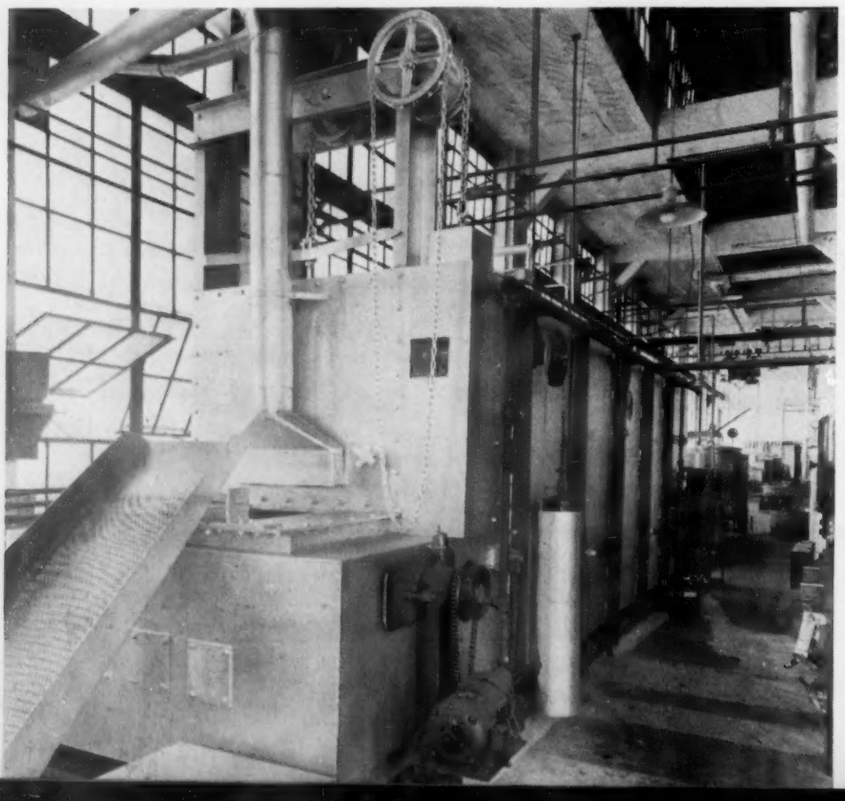


Fig. 2—Loading end of electrically heated, continuous, controlled atmosphere hardening furnace. Two of these units are used at this plant. Photo courtesy Electric Furnace Co., Salem, O.

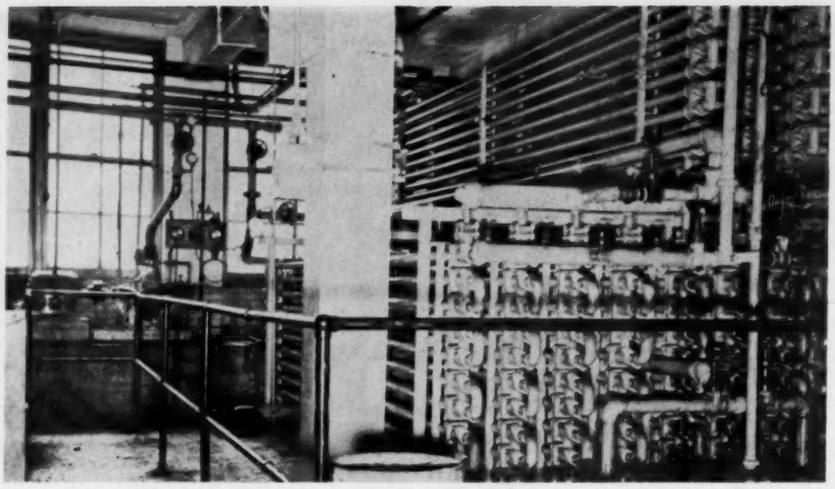


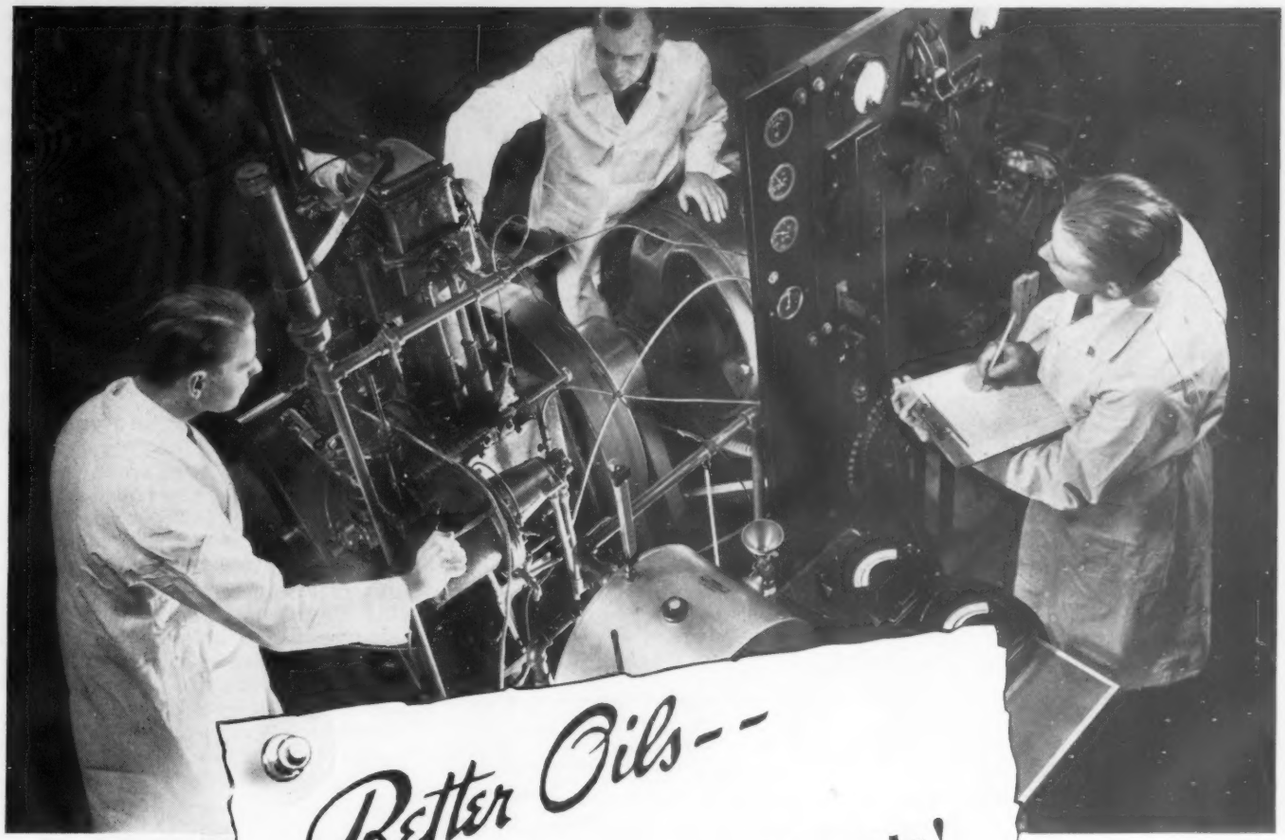
Fig. 3—Cooling coils in quench oil cooling system. Pumps and control in background

Material drops directly from the hardening furnace into an automatic oil quench passing out on an open mesh conveyor to drain off excess oil. Material subsequently goes through a wash and spray of sodium sesquisilicate, held at 180 degrees Fahr.

Oil Reclaimed

There are several rather unusual features about the oil quenching system. An arrangement is employed to reclaim oil picked up by the material and carried out of the quench bath. Water from the rinse carrying this oil is passed into a separate tank which has a selective overflow arranged to drain off the oil which collects at the top. This is done by having a separate pipe connected in the lower portion of the tank and mounted vertically just outside the tank. This pipe is of the same height as body of water to be maintained in the tank. As rinse water containing oil runs into the tank, tank water level rises causing an overflow at this outside pipe to maintain a constant water level in the tank. As the oil level in the tank rises it overflows into a separate reservoir. This simple arrangement reclaims 50 to 75 cents worth of oil a day, requires no attention and no maintenance.

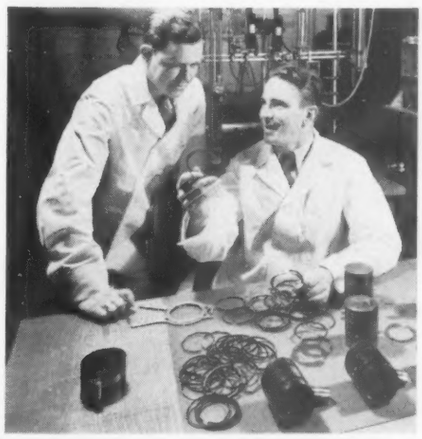
Oil used in quench baths in the continuous hardening furnaces as well as other oil quench baths throughout the department, is part of a continuous circulating system which keeps the oil almost exactly at 100 degrees Fahr. This system involves a 3000-gallon storage tank, motor driven pumps, a bank of cooling coils and automatic controls. Fig. 3 shows part of this



GULF RESEARCH TECHNICIANS develop improved lubricants . . . help industry reduce operating costs!

PICTURED above is a typical scene in the Gulf research laboratories. Gulf technologists, in this instance, are working with an experimental Diesel engine, studying Diesel lubrication problems. Nearby, another exhaustive research goes forward on the lubrication of a modern type of textile spindle. In the next room a railroad car bearing is being run under precisely the speed and load conditions of actual service. And a host of other lubrication problems —many of them born of our rapidly advancing mechanical age—are being studied each day by Gulf's large staff of scientific men.

To what end is this extensive research work carried on? What is its objective? By perfecting better lubricants, and better methods of applying them, Gulf is doing its part to *help industry reduce operating costs*—save money on maintenance and power, improve production and make the machinery for which you paid real money last longer.



These Gulf technologists are examining pistons and rings removed from the experimental Diesel engine shown above, after an extended period of operation. They find that ring sticking, cylinder wear, ring wear, gum formation and objectionable deposits have been minimized by the proper use of the right grades of Gulf's higher quality Diesel lubricants.

Your machinery, old or new, will be better prepared to give you the efficient production you need when you protect it with Gulf's higher quality oils and greases. Available to you, through more than 1100 warehouses in 28 states, is Gulf's complete line of 400 quality oils and greases . . . and the services of an experienced Gulf lubrication engineer. Ask him to recommend proper lubrication for your equipment. GULF OIL CORPORATION, GULF REFINING COMPANY, PITTSBURGH, PA.

GULF INDUSTRIAL LUBRICATION

equipment. The cooling coils consists of two pipes, one inside each other, with the oil arranged to pass between the two pipe surfaces. Ordinarily sufficient cooling is provided by radiation from the outer pipe walls into the atmosphere. When this does not remove heat fast enough, water is run through the inner pipe, also cooling the oil. Valves between stands and manifolds afford means to shut off oil and water from any one of the stands without stopping operation of others.

This is only part of piping, pumps, cooling coils, quench tanks and 3000-gallon storage tank in this system. Control of cooling is accomplished by varying amount of water pumped through the cooling coils. At first this was controlled by hand which gave temperatures as shown in Fig. 5 where the temperature varies between 77 and 106 degrees. This is a considerably more uniform temperature than shown in curves Nos. 2 and 3, Fig. 4, where the temperature varies from 82 to as high as 160 degrees during the latter part of the working day when maximum heat accumulated in the oil. Oil was pumped continuously from a main return tank through a cooling coil without control of any sort being attempted. Fig. 4 shows result.

Such wide variation in quenching oil temperatures was thought to cause variations in results produced, so indicating instruments were installed and hand control inaugurated with the result shown by Fig. 5. Although this is much better, temperature range was still considered excessive.

As a uniform quench temperature eliminates an important variable in all heat-treating operations, it was desired to eliminate this factor entirely. Accordingly automatic control was installed to operate water cooling pumps. It is actuated by oil temperature with results shown in Fig. 6. This not only reduced temperature variation to within 1 or 2 degrees but reduced consumption of cooling water by 313 cubic feet per hour, an estimated saving of $86 per month.

Cooling water is obtained from a sump well fed from cooling jackets of air compressors and from turbo generator condenser and other sources which do not contaminate the water. While this is sufficiently cold for use in cooling coils in the winter, it gets rather warm in summer. When it reaches 85 degrees Fahr., source of cold water is automatically switched to the city mains.

Saves Quenching Oil

This quenching oil cooling system with automatic control maintaining the temperature uniformly at 100 degrees Fahr. not only produces uniform quenching conditions but makes a significant saving in amount of quenching oil used. When oil is too hot, more is lost in vapor. If too cold, more is lost by being dragged out with the work.

Other equipment in the heat-treating department includes five Homo drawing furnaces of the dense load type. Three are rated 1000 pounds per hour, one 600 and one at 200. A dense load of cap screws will be held at a temperature range between 920 and 1000 degrees for approximately two hours. It takes one hour to bring the work up to heat. Resulting hardness will be between 3.8 and 4.2 mm. diameter of impression or between 207 and 255 brinell.

With a specified range of 3.8 to 4.3, actual tests give readings consistently within a 2-point spread. A typical set of 10 tests shows nine readings of 3.9 and one of 3.8 indicating extremely close limits

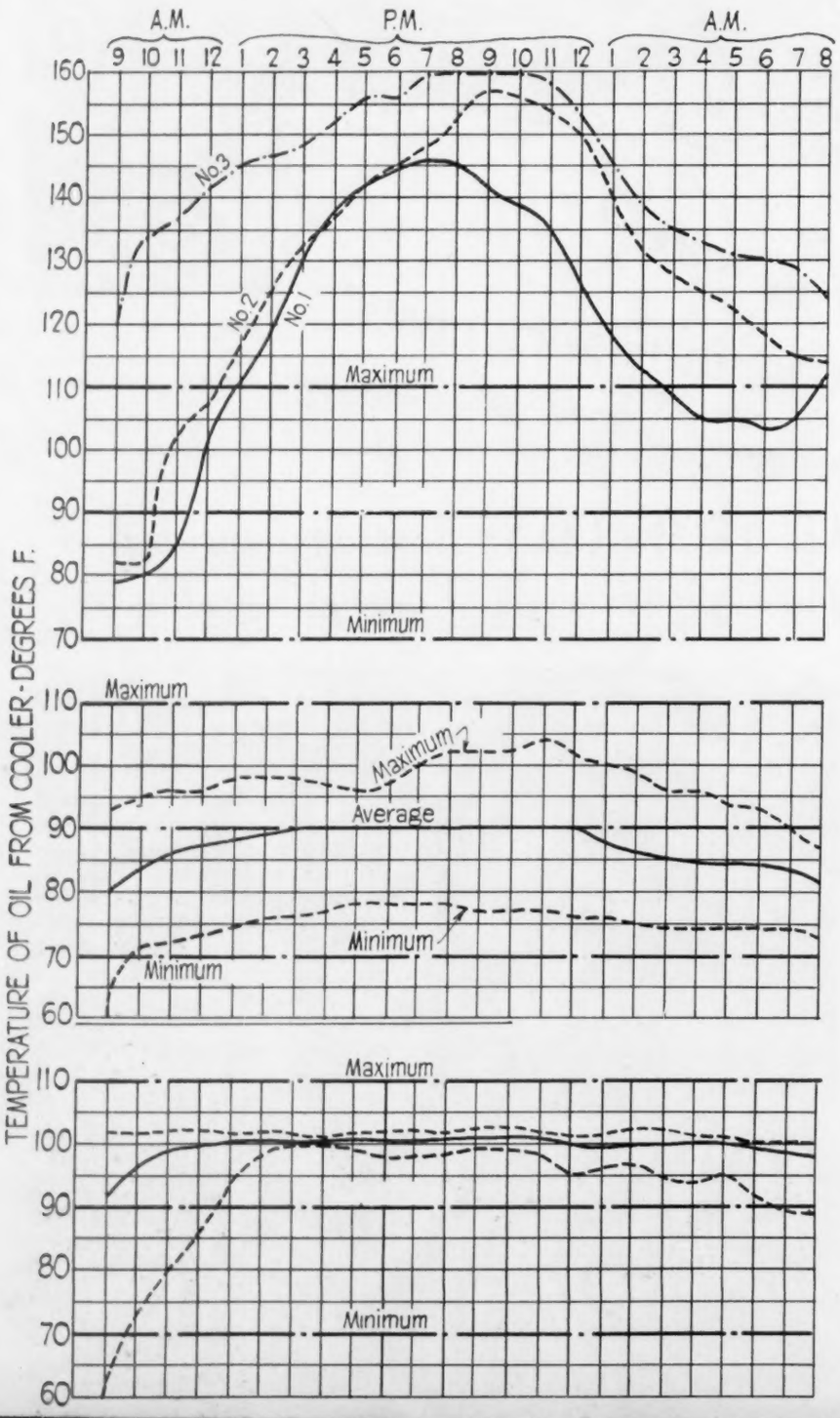


Fig. 4. (Top) — Temperatures of quenching oil as first recorded. Fig. 5. (Center)—Temperature curves using centrifugal pumps and hand control. Fig. 6. (Bottom)—Final closely held temperatures obtained with automatic control

maintained. This is largely due to practice of considering heat analysis cards which follow work through the plant and making slight adjustments in procedure to provide for even small variations in chemical content.

Two batch-carburizing furnaces of the rotary-retort type are rated 600 pounds per load and are gas fired. Typical of the work handled here is carburizing of knurled hub bolts. Knurl must cut into S.A.E. 1025 plate and must not chip or fold. Neither can the threads be brittle. Such work is carburized at 1650 degrees Fahr. for two hours and water quenched. A spiral screw conveyor carries work out of quench. In this as in all other heat treating operations, each batch is tested and must be okayed after heat treatment before it is allowed to leave the heat treating department.

A number of blueing and temper-color furnaces, also gas fired, operate at 550 to 600 degrees Fahr. Work is held in these for about a half hour, just long enough to get up to heat after which it is dumped out and air cooled.

Operations are carefully controlled on many items. For instance, carburization on crest of threads of many bolts is limited to a maximum of 0.005-inch and 0.002-inch on body of bolt.

Stresses Relieved

Almost all bolts are run through a stress relieving and normalizing operation to relieve cold upsetting stresses, especially on bolts where much metal flow is encountered. Otherwise there is a tendency for the head to be brittle and break off under the slightest impact as is easily demonstrated by a hammer blow. All low carbon bolts, where there is a reasonable danger of head brittleness, receive this treatment. Typical procedure is to maintain a temperature of 1200 degrees Fahr. for 25 minutes and automatically oil quench in a water soluble oil which leaves a slight oil film upon drying.

There are six of these stress relieving furnaces, three small ones handling 200 pounds per hour and three large ones rated 600 pounds per hour. These are the screw type in which work is carried through a horizontal revolving chamber as shown in Fig. 7 by means of a spiral on inside of the chamber.

Referring to Fig. 1 showing layout of heat treating department, it will be noted there are 11 tool and die furnaces, nine operating within the 1400 to 1650 degrees range and two used for low temperature drawing between 400 and 600 degrees.

Other equipment in the tool and die department includes two oil bath drawing pots, two lead pots, two forge furnaces, two special drawing plate furnaces, three pots for high speed steel, a salt bath furnace and a high temperature gas fired furnace for high speed steel. Fig. 8 shows a view of the equipment in the high speed corner.

Other equipment used in heat treating bolts and nuts includes a car type furnace fitted with 12 pots with total capacity of 2 tons. This also is gas fired and is used for batch annealing, overnight usually, material being held between 1600 and 1800 degrees Fahr. Also there are five miscellaneous batch hardening and normalizing furnaces and four cyanide and salt treatment furnaces with two pots each for handling wide variety of work.

As the continuous, electric furnace, scale free hardening equipment is of the latest type, it warrants a detailed description. Furnace chamber is a fabricated steel shell, lined with insulating material to form a tunnel through which the continuous conveyor passes. Nickel-chromium alloy bars on floor of chamber elevate the lower flight of endless chain conveyors above the refractory hearth. Hearth proper is formed by upper flight of the chain belt.

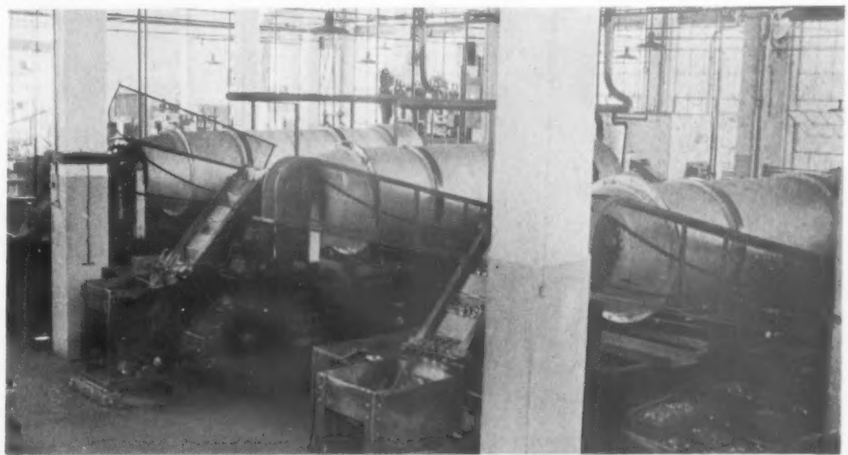
Electric heating elements, heavy cast nickel-chromium grids, are divided into two sections, each separately controlled by pyrometers to afford 2-zone control for the furnace. Entire length of conveyor chain, except a short distance at loading end, is at all times under heat within the furnace, in this manner conserving heat absorbed by the chain.

One-Man Supervision

A chute, under the discharge end of the conveyor drops the work directly into the quenching medium. An endless belt running within the quenching medium receives the pieces, carries them a short distance through the quench bath and then carries them out of the quench. Design of the equipment is such that one man, continuously loading bolts at the charging end, can easily supply what supervision is necessary for the entire hardening and quenching process.

Furnace is 22½ feet long, 6 feet wide and 10 feet 3 inches high. Quench tank including sealed chute and discharge conveyor is about 18 feet long and 4½ feet wide.

Scale is prevented from forming on the work in the furnace by maintaining a protective atmosphere within the furnace chamber, which is made as gas tight as possible. Connected heating load is approximately 140 kilowatts. The equipment just described is one of two similar units in this plant. Both were designed and built by Electric Furnace Co., Salem, O.



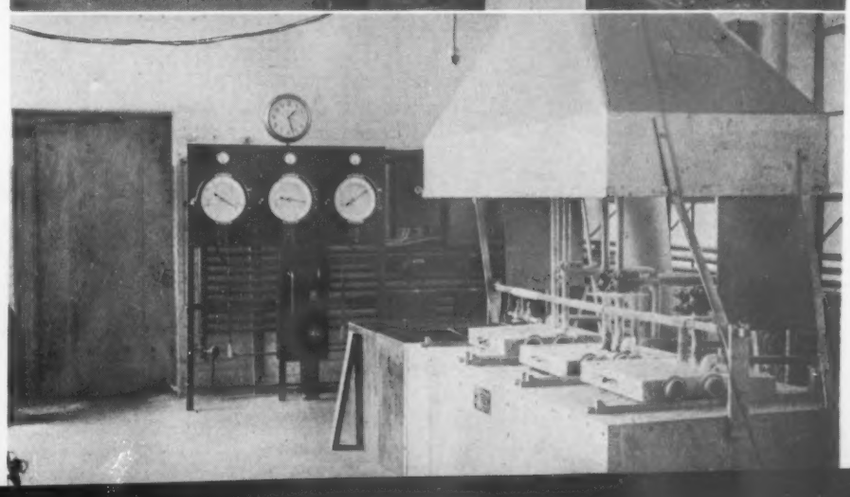
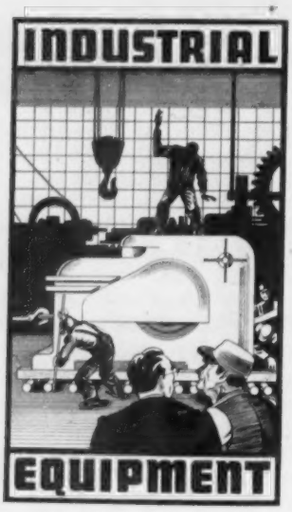


Fig. 7. (Above)—Three of the stress-relieving rotary type furnaces. Fig. 8. (Below)—Equipment used in connection with treating high-speed steel parts



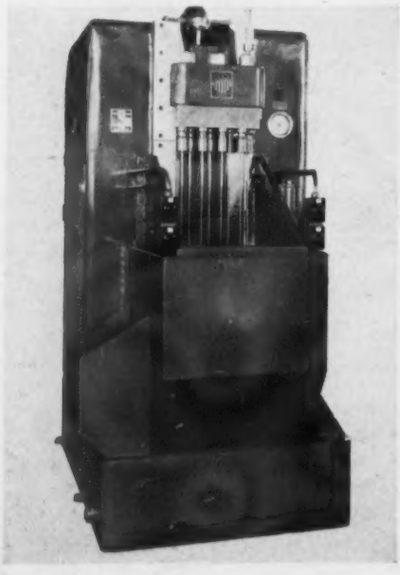
Broaching Machines Have Lower Loading Height

■ American Broach & Machine Co., Ann Arbor, Mich., has introduced a line of Type VP hydraulic internal broaching machines of the vertical pull-up design, built in several different sizes and tonnages to suit a wide range of automatic or semi-automatic operations.

Illustration shows front view of the VP 3 machine equipped with 8 broaches for full automatic high production operation. Machine column is built integral with lower base, making a heavy box-type construction. Built into this column are the steel guide ways and caps, accurately fitted to the broach pulling cylinder slide. Sundstrand variable delivery pump is used for operating the broaching cylinder, and a small auxiliary pump operates the broach elevating cylinder. Hydraulic valves which control the machine cycle are solenoid operated.

Machine is driven through V-belts. Control of broaching stroke is by limit switches operated from adjustable cams mounted on their respective cylinders.

Loading height of this machine is unusually low, making it convenient for the operator to handle work as it is placed in the machine below or under the work table. Broaches required are shorter than the conventional type.



Draws Iron Impurities From Powdered Materials

■ Stearns Magnetic Mfg. Co., Milwaukee, has added to its line a magnetic separator designed to remove reluctant, minute magnetic particles from finely powdered materials.

In operation of this Style V separator, material to be purified is spread uniformly over the magnet's face. Impurities contacting the pre-

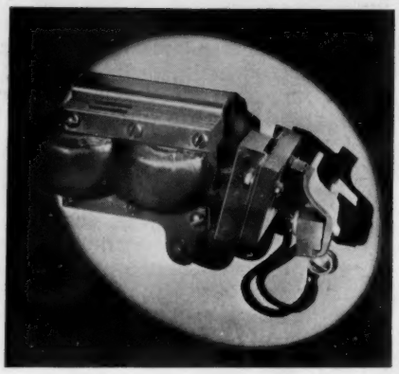
magnetized pole of the magnetic field are removed by this secondary or deflecting field, allowing purified material to continue through the machine to final delivery. Housing is fabricated from non-magnetic material, and for special requirements all surfaces are chromium plated.

Separator has no moving parts, no bearings that require grease, and is dust-tight to prevent contamination of material being purified. It is said iron impurities of high magnetic reluctance and of infinite fineness can be removed by this process.

Relay Provides Control For Synchronous Motors

■ Electric Machinery Mfg. Co., 1331 Tyler street, S.E., Minneapolis, has developed a polarized field-frequency relay for controlling application and removal of direct-current field excitation for industrial synchronous motors.

Relay enables synchronous motor to exert its maximum effort to pull its load up to synchronous speed in a minimum time. It eliminates backlash to driven machinery and reduces voltage disturbance on the power line during synchronizing of the motor.

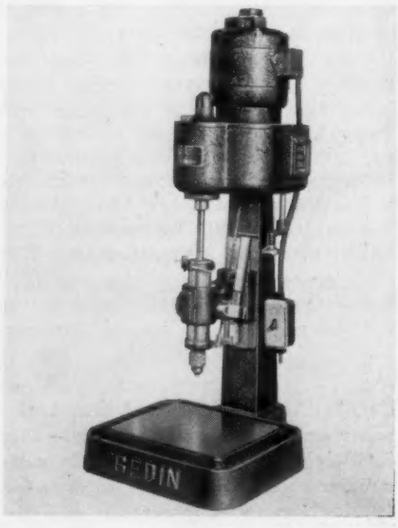


Polarized action of this relay makes it selective to apply field excitation at the most favorable angle between the stator and rotor poles to pull the motor promptly into synchronism without pole slippage. Should a momentary voltage dip or overload pull motor out of step, polarized relay removes excitation automatically, allowing motor to resynchronize.

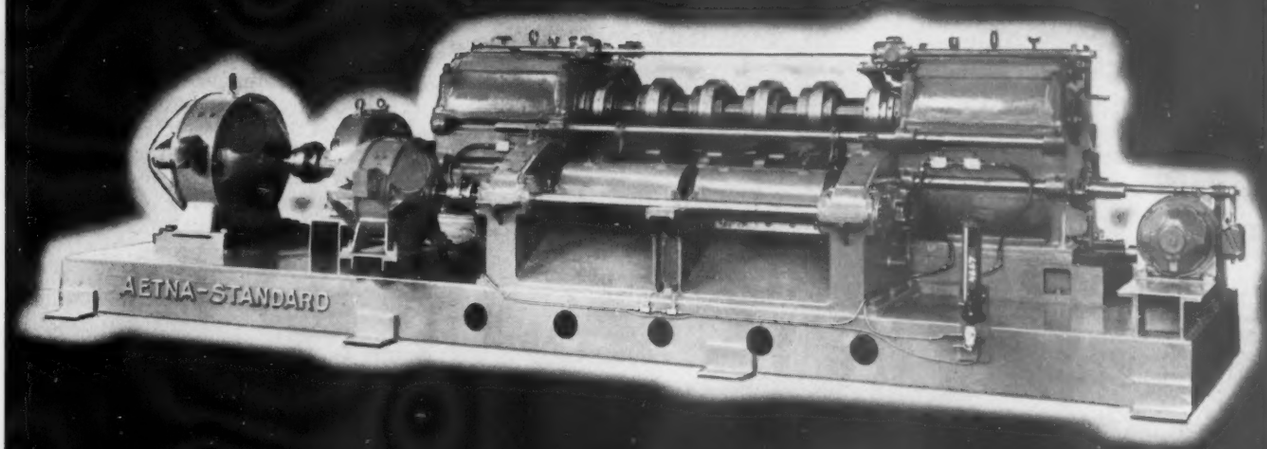
Drill Transmission Is Rolling Wedge Type

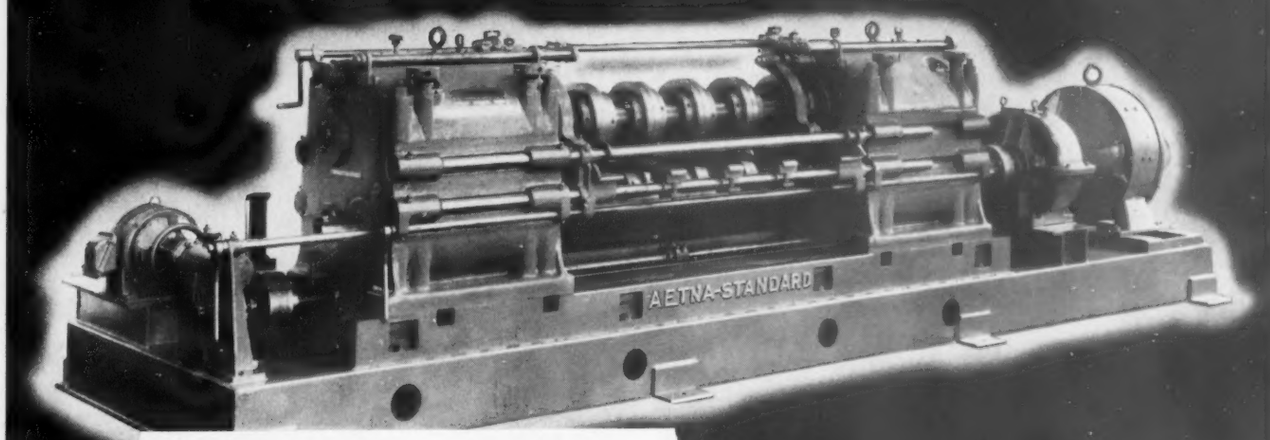
■ Crescent Mfg. Co., Rockford, Ill., has introduced the Redin No. 0 sensitive drill for highspeed production work or precision tool room jobs.

Rigidity in design and accurately machined parts, combined with New Departure grease-sealed ball bearings, provide sensitiveness required to put the "feel" into drilling. Rolling wedge, 4-speed transmission is said to be as powerful as a gear drive and yet smooth in operation. There is no vibration, and pressure is adjusted automatically to re-



SLITTERS





The new Aetna-Standard Side Trimming Slitter shown above, is designed to give instant control for width without sacrificing any convenience for multiple slitting. Removable arbors, which will materially decrease lost time in changing set ups, are included.

Completely enclosed drive and adjusting parts, new scrap cutting and guiding equipment, as well as many other new features are provided to assure greater accuracy in slitting and side trimming.

The **AETNA-STANDARD**
ENGINEERING COMPANY
Youngstown, Ohio

CONSULTANTS · DESIGNERS and BUILDERS TO THE STEEL AND NON FERROUS INDUSTRIES

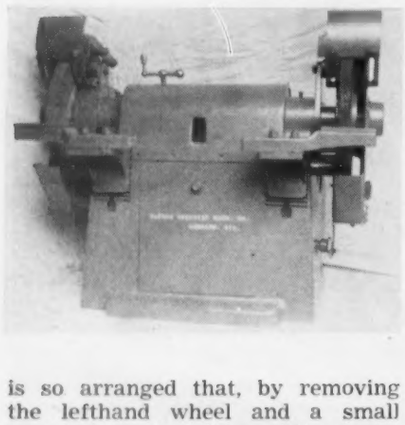
sistance of work being done. Speed changes may be made while motor is idle or running.

Drilling capacity of this unit is 0 to 5/16-inch, and spindle travel is 3¾ inches. Spindle speeds of 900, 1800, 3300 and 5000 revolutions per minute are provided through the transmission from the ½-horsepower motor, which operates at 1725 revolutions per minute. Machine is 38 inches high overall.

Grinder Periphery Speed Held at Constant Rate

■ Ransom Grinding Machine Co., Oshkosh, Wis., has added to its line the Type D constant periphery speed grinder for 24-inch vitrified wheels at 6400 surface feet per minute.

Speed control is accomplished by turning handwheel shown at top of the machine. Texrope drive is furnished in the speed changer unit. Drive from this unit to the spindle



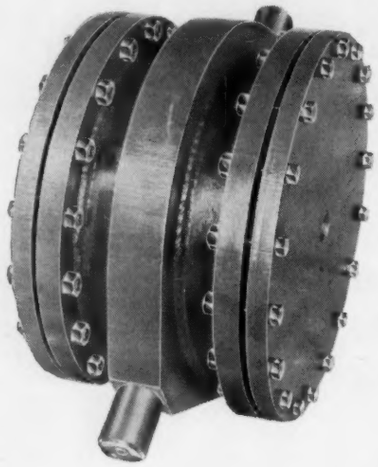
is so arranged that, by removing the lefthand wheel and a small guard at front of the machine, ropes can be replaced easily. Speed adjustment can be made with machine in operation. The 24-inch wheels at 100 revolutions per minute can be worn to 12 or 13-inch diameter running at 1850 revolutions per minute, thus maintaining constant periphery speed.

Introduces Heavy Duty Mill Type Air Cylinders

■ Logansport Machine Inc., Logansport, Ind., has brought out a line of non-rotating, double acting, allsteel air cylinders for extremely severe service.

Steel flanges are electrically welded to seamless steel tubing, and heavy duty steel end covers are bolted to these flanges with through bolts, making for easy assembly. Construction throughout, including an extra strong leakproof piston, is designed to give maximum trouble-free life.

This line of cylinders is recommended for use in steel mills, foundries, heavy manufacturing plants and other locations where heavy duty equipment is required.

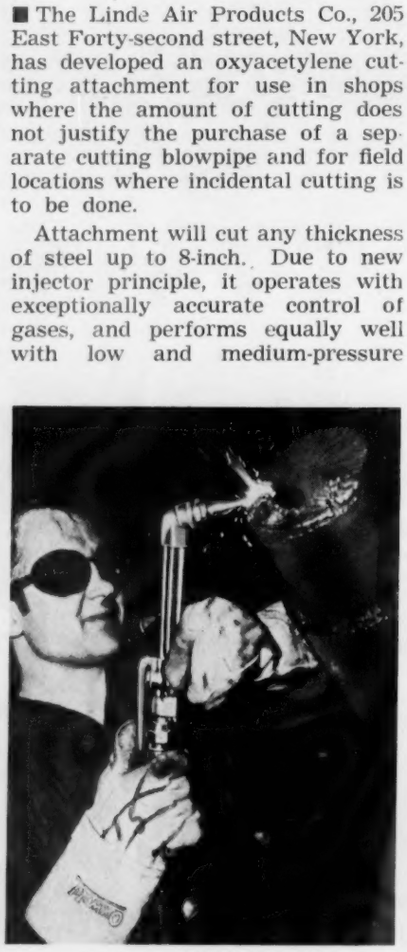


Each of the six models is furnished with standard size piston rod or with 2-1 piston rod differential. They are also furnished with oversize rod other than 2-1 to meet special requirements.

Oxyacetylene Attachment Cuts Steel Up to 8-inch

■ The Linde Air Products Co., 205 East Forty-second street, New York, has developed an oxyacetylene cutting attachment for use in shops where the amount of cutting does not justify the purchase of a separate cutting blowpipe and for field locations where incidental cutting is to be done.

Attachment will cut any thickness of steel up to 8-inch. Due to new injector principle, it operates with exceptionally accurate control of gases, and performs equally well with low and medium-pressure

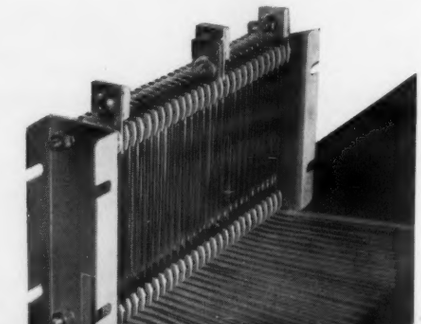


acetylene. Unit is characterized by the stability of its preheating flames and superior flashback resistance. Known as the CW-23, this attachment can be used with either the W-17 or W-22 Oxweld blowpipes, and it extends usefulness of either blowpipe by adapting it to cutting steel, wrought iron and cast iron.

Designs Resistor with Steel Mill Stamina

■ Cutler-Hammer Inc., 315 North Twelfth street, Milwaukee, recently placed on the market a new resistor, known as the DUR-ristor, design of which is characterized by a ruggedness which enables the unit to stand up under severe overloads.

Resistance unit proper is a continuous path, formed by a single thin, flat strip of nickel chromium



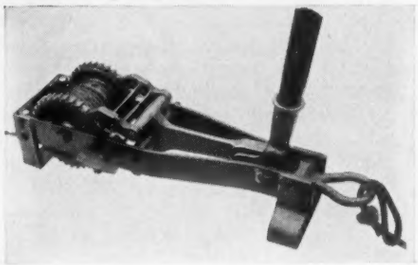
alloy, ribbed for added strength. End frames, through bolts and steel supports are said to be virtually indestructible. Terminals are permanently riveted and welded to the strip so that no loosening occurs even under shock or continuous vibration. There is no material between resistance strips to prevent free circulation and maximum heat dissipation. Resistor is compact in construction and light in weight, averaging about 20 pounds.

Powerful Steel Winch Does Heavy Pulling Jobs

■ Baker-Roos Inc., 602 West McCarty street, Indianapolis, has introduced recently the Lo-Labor winch, a simple but powerful unit that enables one man to handle a pulling job that ordinarily would require a whole crew. Pressure applied to handle is multiplied approximately 200 times, making the winch situable for such heavy jobs as spotting cars, moving machinery, erecting structural steel, moving buildings or loading trucks.

Unit weighs only 100 pounds and

is 3 feet long, making it easily portable. High grade steel castings give it sufficient strength for heavy



duty service. Absolute safety within the capacity of the cable is assured because one of the two sets of dogs is constantly in mesh with the teeth of the drum, By use of the release pedal it is possible to release more than one set of dogs at one time.

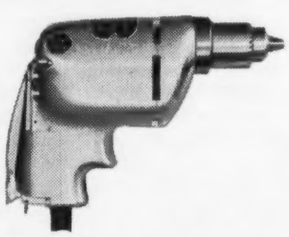
Ducts Exhaust Fumes From Plating Barrel

■ Hanson-Van Winkle-Munning Co., Matawan, N. J., has added to its line of electroplating equipment a new Mercil plating barrel tank, designed for hot solutions. It employs a unique method of exhausting fumes. A series of small ducts directly over the anode rods connect with the main duct on the side. These individual ducts do not interfere with placement of the cylinders into the tank in their respective saddle brackets. Unit is neat in appearance and is compact and effective.

Announces Drill for Light Industrial Work

■ Black & Decker Mfg. Co., Towson, Md., has placed on the market a lightweight, compact 3/16-inch electric drill for highspeed, continuous service in aircraft and light industrial work.

Known as the Hornet, this drill weighs only 34 ounces, but in spite of this light weight it has sufficient structural strength to stand up un-



der continuous service. It has a splined gear mounting, ball bearings, screened air inlets, an ample fan, grip type switch and a universal motor. Operating speed is 3700 revolutions per minute, with an optional speed of 5200 revolutions per minute.

Multiple-Passage Hose For Welding and Cutting

■ Hewitt Rubber Corp., 240 Kensington avenue, Buffalo, has devised a new type of welding hose, known as Twinweld. Employed to convey oxygen and acetylene for welding and cutting work, this hose consists of two lines of unusually flexible, cord-reinforced welding hose molded into a single unit. It will not kink or writhe and twist under high pressure, and taping is unnecessary.

Individual passages have an innerlining of non-blooming, gas-resisting compound. Carcass is made to resist pressures much higher than those incident to welding service. This product is available in any desired cut length or in continuous lengths up to 500 feet. Hose is installed by splitting it along the joint line at each end a sufficient distance to form a convenient "Y" at both tank and torch ends. Then ferrules are crimped to prevent any further separation of the two hoses.

TYPICAL OF KINNEAR'S ABILITY TO MEET *ANY* DOOR NEED

So They Used Motor Operated

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Doors were needed that would open and close the full width of a 75 ft. wide opening . . . to allow a large crane to pass from one section of the building to another. And they wanted doors that would operate quickly, easily, and economically. A tough problem, you might think — but not for Kinnear!

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Metals Are Key in National Defense, A.I.M.E. Is Told

(*Continued from Page* 16)

the preservation of peace, because we have seen the effects of war as written in the social, economic and political upheavals since 1918. These stresses and strains have brought civilization near the cracking point. Another world war might well result in the complete collapse of civilization."

Mr. Girdler discussed the economic situation is general, and stated that while the country is faced with many staggering problems, he did not regard the outlook as hopeless.

"I am convinced," he said, "that the American people will weary, in fact, already are wearying of false doctrines and unsound experiments. They know that when business prospers the country prospers, jobs are more plentiful and pay envelopes are fatter. The stake of labor in an active industry is tremendous. It gets 84 cents of every dollar of income produced and paid out by manufacturing industries, according to authoritative studies.

Less Spending Sighted

"In its own interest the country, I believe, will insist upon a halt in the rise of taxes and of excessive spending, as well as upon policies and measures which discourage and restrict private enterprise and private investment. Already we have seen some tangible and heartening signs that the tide is turning in that direction.

"We hear it said that government economy is impractical because it is politically difficult to stop deficit spending when it should be stopped from sound economic consideration. But those difficulties should disappear once the people awaken to the calamities in store for them if spending continues at the present rate. Then it might become politically unpopular to raise taxes and pile up deficits.

"It is maintained also that if the government stopped spending, it would send business into a tail spin, but that would not happen if private capital were to take up the slack of reduced government spending.

"Private capital in the hands of institutions and millions of citizens is available in abundant supply. Certainly the need for capital exists in a thousand places."

The life span of American iron ore deposits will be more than doubled by the use of a new development in the sink-and-float process of extracting minerals, according to W. B. Foulke, E. I. du Pont de Nemours & Co., Wilmington, Del., who predicted that the new method would also reclaim large quantities of coal of too low grade to be of use under such extracting methods as have prevailed until recently.

The "sink-and-float" technique of extracting minerals, he said, has been known for 30 years, but heretofore has been consdiered impracticable because of its costs. Ores are dumped into liquids from one to three times heavier than water, the refuse floats off and the minerals sink. The new method, which is a development of the Du Pont company, provides a way of keeping the minerals from absorbing such quantities of the liquids used as to make costs exorbitant. Instead of costs of $20 a ton for the absorption, the new process is expected to cost only 5 cents a ton.

The minerals are prevented from absorbing the heavy liquid by first spraying the ore with an "immunizing" agent. Reduction in the cost of the heavy liquid is also effected by adding water. The ore dumped into the extraction bath sinks to the bottom, heavier particles of refuse float in the heavy liquid and the latter particles float in the top layer of water.

Mr. Foulke explained that the costs of installing the new process are moderate. Addition of apparatus at a cost of $200,000 to a $3,000,000 plant already in use will adapt the plant to it, he said.

Control by Electric Ear

A device for automatically controlling operation of grinding mills by their sound was described by Harlowe Hardinge, vice president and general manager, Hardinge Co., York, Pa. This device, known as the "electric eye," can be applied to various types of mills employed in grinding ore, cement, coal, coke, limestone, silica sand, enamel, clay, ilmenite, chrome ore, and other materials.

It was pointed out by the speaker that the sound made by mills has long been used as the "tell tale," and by experience the operator is able to determine if the mill is running properly. Some operators are able to detect the difference in sound better than others and get better results running the same mill under the same conditions.

To provide a more exacting method of control, exhaustive tests were made in measuring sound levels of mills operating in their most efficient range. This sound level determined, the "electric ear" then is applied to maintain the operation of the mill within this range. The electric ear comprises a cabinet containing an electrical control circuit, an operating control panel and a microphone, the microphone being located at the focal point of a parabolic reflecting shield in which it is suspended. This shield, placed near the mill adjacent to a point at which the balls strike the lining, increases the intensity of sound from the mill and eliminates extraneous noises.

The cabinet houses the electrical equipment and power relay for controlling a feeder and other auxiliary mill equipment from the sound energy received by the microphone. A time relay prevents momentary changes when the noise fluctuates excessively at short intervals. In its functioning, the electric ear controls the rate of feed of material to the mill.

According to Mr. Hardinge, the International Nickel Co. of Canada Ltd. installed an electric ear on one of its mills at Copper Cliff, Ont., a year ago. Through use of the device, production is increased approximately 10 per cent and power consumption decreased by the same amount.

Study Stainless Passivity

Surface characteristics of stainless steels came in for much consideration with H. H. Uhlig, research associate, department of chemical engineering, and John Wulff, associate professor of physical metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., commenting on the nature of passivity in stainless steels and other alloys.

They outlined first a number of experiments and presented conclusions, including the observation that the surfaces of the alloys are of essentially the same composition as the alloy. This they declared, can be interpreted either that contrary to conclusions based on analysis of thermally produced films, the surface film is of the same composition as the alloy, or that no oxide film exists.

They observed that their experiments seemed to require more than a single picture of passivity based on multiproperty oxide film of one kind or another, which protects the metal from attack. The experiments, they observed, did not exclude the possibility of a film under certain conditions on the surfaces of stainless steel, but rather emphasized the necessity for investigating the properties of the surface metal atoms to account for all the phenomena observed.

Any general picture of passivity based on protective veneer afforded

by a layer of atoms either adsorbed or in chemical combination with the surface metal is inadequate to explain all the results of the experiments, they said.

In their attempt to show that passivity of metals can be described through electron sharing of metal atoms, the authors presented a concept which they believed explained the effect on passivity of alloy constituents like chromium and molybdenum in stainless steels as well as the effect of the normally considered passivating agents like nitro acid or a layer of adsorbed oxygen atoms. The authors also demonstrated that where the proper sharing ratios occur on the metal, the surfaces exhibit the properties of passive metals. In evolving their theory, they limited themselves to the transition and pretransition elements which, as pointed out by others, show a striking tendency to exhibit passive characteristics.

The utility of the present viewpoint rests, they said, on its greater breath of applicability to passive phenomena in general and the treatment of passive alloys in particular. The theory, they concluded is shown to be an agreement with known compositions of passive iron-chromium, iron-molybdenum, iron-metal and iron-nickel-molybdenum alloys. Furthermore, they said, it permits an interpretation of anodic corrosion products of stainless steels as well as threshhold potential measurements in halide solutions, which an oxide film theory can account for only with difficulty.

Spheroidizing is Investigated

Observations recorded during a study of the spheroidizing process were presented by I. N. Zavarine, assistant professor of physical metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., in a paper under the title, "Phase Changes in 3.5 Per Cent Nickel Steel in the Ac_1 Region."

Results indicated, he said, that the hardening of 3.5 per cent Ni steels subjected to cyclic heating and cooling was due to the formation of a solid solution; also that the carbide in nickel steels was dissolved partly or completely at temperatures considerably below the critical point on heating. The lowest temperature of the beginning of solid solubility of the carbide in these steels was observed to be in the neighborhood of 600 degrees Cent.

The subcritical solid solution was different from austenite. It was not hardened, he said, by quenching to the same extent as austenite and it did not transform into ferrite and microscopically visible carbide as austenite does on slow cooling. The nature of the subcritical solid solution must remain obscure until a reliable constitutional diagram is evolved for the iron-nickel-carbon alloys.

Limited experience with 3.5 per cent Ni steel, Mr. Zavarine said, allows the consideration of two possibilities: (1) The solid solution formed at subcritical temperature is a distinct phase, intermediate between the ferrite-carbide agglomerate and austenite; and (2) the subcritical solid solution is a mixture of alpha and gamma phases. He pointed out the possibility of existence of the two phases in iron-nickel alloys has been indicated by other investigators. He remarked that the solubility of carbide in the mixture of two phases and the unusual behavior of such a solution on cooling presented an interesting problem.

In a discussion of the influence of atmosphere and pressure on the structure of iron-carbon-silicon alloys, Alfred Boyles, metallurgist, Battelle Memorial institute, Columbus, O., described experiments which were a continuation of the work on the graphitization of cast iron conducted as a part of the program of fundamental research of the institute. In previous work, the speaker said, it was found that melting in hydrogen increased the amount of eutectic carbide appearing in cer-

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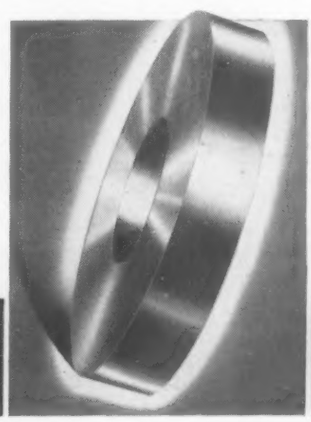

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tain alloys and in others produced marked changes in the size of the graphite plate.

These effects seem to be closely related to the amount of sulphur and manganese present in the material. Iron-carbon-silicon alloys did not respond to hydrogen in the same manner as cast iron and there was no evidence to show that hydrogen was able to stabilize the carbide in such alloys unless additions of sulphur were made. The two alloys examined contained about 2 per cent silicon.

Mr. Boyles' discussion concerned itself with alloys of lower silicon content and covered structural changes produced by melting in various atmospheres at pressures ranging from a partial vacuum up to 300 pounds per square inch.

♦

Cites Increase in Power Without Additional Fuel

■ Additional electrical power without use of additional fuel can be obtained in many power plants by application of either high or low pressure turbines to existing units, according to L. E. Newman, turbine specialist, General Electric Co., Schenectady, N. Y., who spoke recently before the Association of Iron and Steel Engineers in Birmingham, Ala.

By "topping" turbines with a high pressure unit, 25 to 50 per cent more power can be obtained from the same quantity of fuel, he said, and in cases where waste steam is available at about atmospheric pressure, addition of low pressure condensing turbines will generate more power at no increase in fuel cost. Installation of superposed turbines is recommended where additional power generating capacity is needed, where present station main pressure is 400 pounds or less, where supply of cooling water for condensers is limited, where existing boilers are old and must be replaced, where fuel is costly and where governors of present turbines are unable to hold frequency as closely as desired.

Mr. Newman pointed out that application of low pressure turbines is more limited than that of topping turbines. They pay for their installation more quickly, however. Conditions favorable to installation of low pressure turbines are present where a fairly constant flow of waste steam at atmospheric or higher pressure is available, where ample cooling water for condenser is available, where additional generating capacity is needed, where boiler feed water must be conserved, where fuel is costly.

♦

Welding Technique as Germans Employ it

■ *Basic Features of Welding Technique* (Grundzuege der Schweisstechnik), by Theodor Ricken; paper, 63 pages, 6 x 9 inches; published by Julius Springer, Berlin, Germany; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

This work, which is printed in German, is designed to give to engineers and others concerned a review of the present status of the entire welding technique, and point out its application possibilities. The book is divided into eight chapters, including an introduction. Chap. II discusses welding in which pressure is employed such as forging, butt welding, and spot welding. Chap. III briefly describes thermit welding and Chap. IV is concerned with gas and arc welding methods. Planning, estimation, and execution of welded structures are discussed in Chap. V, and the special fields of welding technique in Chap. VI. Testing of welded seams and cost estimation for welding are described in Chap. VII and VIII.

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Applies Lift Platforms To Loading Operations

(*Concluded from Page* 48)

fact that all of the plant floor space is available for storage or production work. It is not necessary to tie up areas for built-in ramps, loading docks or similar arrangements to facilitate the loading or unloading operations.

Also since all the operations are 100 per cent mechanized, loading and unloading may proceed with extreme rapidity and maximum efficiency. Also, the equipment being level with the floor when not in use means that it is entirely out of the way and thus is not a hazard to men or equipment. As shown in Fig. 3 a large amount of floor area is free for storage right up to the driveway on which the trucks drive through the plant. As an aisleway would ordinarily be incorporated with any type of loading or unloading system employed, the driveway occupies no extra space.

Since a lift platform of this nature can easily be installed in any location, it involves minimum amount of alteration to the building structure in case a loading or unloading area is to be changed from one portion of the plant to another. This wide flexibility may be a significant factor in many plants. Having used this system for a considerable period of time, the Ohio Crankshaft Co. feels it constitutes a most efficient method of handling the loading and unloading problem at this plant. It is felt this system is responsible for a good portion of the extremely low handling costs here.

•

Arc Welding Course for Employes in Tri-Cities

■ American Society for Metals and Lincoln Electric Co., Cleveland, will sponsor a special course in arc welding March 6-10 at Rock Island arsenal, Rock Island, Ill. It will be available to employes of industrial concerns in Moline and Rock Island, Ill., and Davenport, Iowa. E. W. P. Smith, Cleveland, will direct the course.

Opportunity will be offered to study redesign of products for arc welded construction. The course will include talks and demonstrations on welded design and construction and welding engineering problems will be treated in consultation sessions.

Among subjects to be covered are: Arc welding generators; performance of welding arc by magnified projection; shielded arc; calculating stress distribution; changing from cast, bolted or riveted design to welded; hard surfacing; organizing welding department; estimating costs; shop practice. Fee for the course is $5.

•

Alloy Cuts Cost of Tractor Hood Dies

(*Concluded from Page* 56)

and pickled sheet steel. Size of the blank is 24½ x 59¼ inches. These dies will have an output of 200 pieces per day, it is estimated. They probably will be used for several years due to infrequent model changes.

In addition to the savings made above on initial cost, it is expected that other savings will shortly be evident due to better performance on products. One die producing double cornered refrigerator top stampings has already made 1,350,000 pieces from 0.050-inch material and has been stoned and polished only twice a year, one-third the amount usually required.

The high graphitic surface lubrication of Strenes metal greatly resists galling and pickup, and so requires little maintenance.

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Concealed Fasteners

(*Concluded from Page 44*)

in the hole. These grooves fit the ribs in the tapered body of the fastener when it is inserted in the hole and thus keep the fastener from turning.

Common method of construction is where outer panels are joined together by bolting through to a welded steel bridging bar which forms the framework for the structure, the bar bridging over the joint between the two outer sections. Many variations have been developed to meet particular applications. New types of Permagrip fastenings are of particular interest.

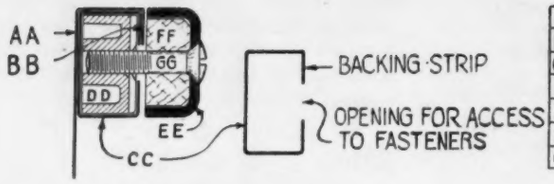
At the right in Fig. 5 is the nailing type which contains four notches on the outer circumference for use with two or more nails to locate firmly the Permagrip fastener in the plywood panels. This provides a simple method of keeping the fasteners securely in place during process of assembling the panels.

All-Metal Construction

Fig. 2 shows another recent development featuring a type useful in all-metal construction where wood backing for the metal panels and wood backing strips at joints are completely eliminated. No counterboring or branding is required when using this rectangular type fastener and the construction produced is entirely of metal. Figs. 3 and 4 show methods of using the rectangular type fastener. In Fig. 3 a metal backing strip is employed in connection with a metal panel which holds the rectangular fasteners. In such assemblies the outer sheet is gripped around the edges in the standard method, using wood backing.

In Fig. 4 an alternate method is indicated where the channel CC in Fig. 3 is omitted and sheet AA is simply bent and rebent to form a channel which receives the rectangular fastener. In this case, of course, holes must be provided at back of the flange for bolts to engage the concealed fastener. It will be noted in this method the rebent flange is not closed entirely, an open space being retained at the bottom to permit shifting the fasteners to their proper location.

Use of these fasteners permits



AA	OUTER SHEET METAL PANEL
BB	BACK FLANGE OF PANEL
CC	FORMED CHANNEL BACKING STRIP
DD	RECTANGULAR FASTENER
EE	SECTION OF MAIN FRAME
FF	WOOD FILLER IN MAIN FRAME
GG	THREADED BOLT

Fig. 3—Metal backing strip method of construction using the rectangular fastener

wide variation in type of construction. For instance the wall or panels may consist of an outer metal sheet over a plywood panel with backing strip separating this panel from a second inner plywood panel making a double wall construction where desired. To this same construction may be added an inner sheet of metal where both outer and inner surfaces of metal may be desired. Similarly a solid wood construction may be used in place

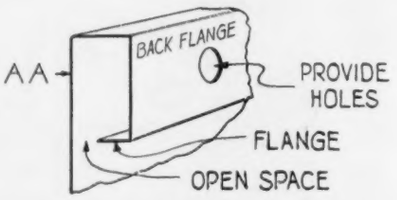
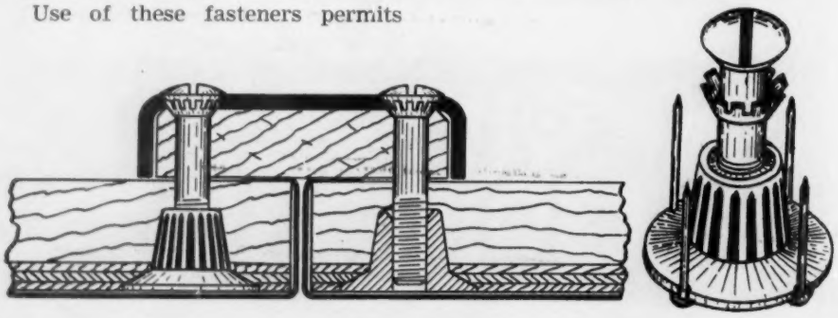


Fig. 4—An alternate method of using the rectangular fastener. This eliminates the metal backing strip CC in Fig. 3

of strips between the inner and outer plywood panel. Likewise this system is readily adapted to making walls of extremely high insulating value by incorporating various types of insulation between the inner and outer plywood panels.

In one case, special bulletproof bodies have been constructed by including an armor sheath in the wall construction. Similar variations

Fig. 5—At left is shown method of using Permagrip fasteners to join panels using a bridging bar across back of joint. At right is the special nailing type fastener



appear to be possible without limit. Where desired, the joints between outer sheets may be filled in with solder and subsequently ground smooth to furnish a perfectly smooth surface with no visible joints. Since the outer sheet of metal is not subjected to strains, the joints themselves are not stressed so the solder will not pull apart.

Revised Specifications For Bridge Welding

■ *Specifications for Welded Highway and Railway Bridges*, paper 88 pages, 6 x 9 inches; published by American Welding society, New York; supplied by STEEL, Cleveland, for $1; in Europe by Penton Publishing Co., Caxton House, Westminster, London S. W. 1.

This is the second edition of this work, the first having been issued in 1936. The past two years have seen such rapid and varied progress in welding that revision of the first edition was necessary.

Design, construction and repair of railroad and highway bridges are covered. The permanent committee for the interpretation and review of the bridge welding specifications of the American Welding society was enlarged in 1936 by addition of representatives of the American Railway Engineering association and the American Association of State Highway Officials, and became known as the conference committee for specifications for welding bridges, of the American Welding society.

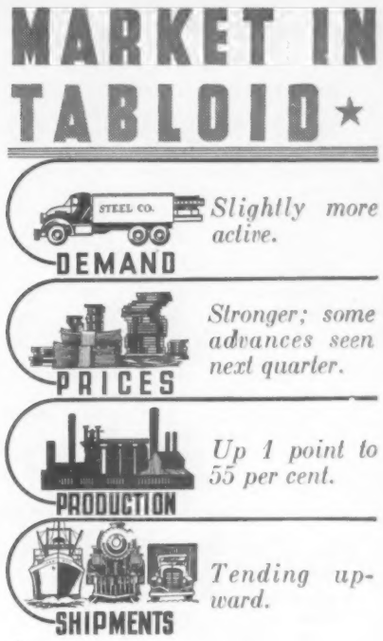
The specification, mandatory on all parties to contracts subject to the American welding society specification, includes general provisions, design of new bridges, strengthening and repairing of existing bridges, filler metal, equipment and processes, workmanship, technique of arc welding, gas welding and gas cutting, inspection and qualification.

Appendix A covers unit stresses for welded design, appendix B welding technique for arc welding with heavily-fluxed or covered electrodes, appendix C definitions, appendix D legend for drawings specifying fusion welding and appendix E recommended practice for making welded joints.

The text is profusely illustrated by line drawings and an index provides ready reference to the entire work.

Demand Improving; Operations Higher

Steel Users Cautious But Tonnage Rises; Scrap Stronger



■ STEEL markets have a better tone. A steady or upward trend in demand for most products, a gain of 1 point to 55 per cent in the national steelmaking rate and more strength in scrap prices in certain districts contribute to an improved situation.

The shorter month will work against February's comparison with January in bookings, but the difference between the two periods is expected to be slight. In some areas miscellaneous consumers are furnishing a large share of latest gains in business.

Steel users still are reluctant to order far ahead. The resulting large number of small purchases is preventing accumulation of mill backlogs, but the steady flow of such business is indicative of sustained consumption.

Automobile companies are following a similar buying policy, ordering in relatively small lots but more frequently than was the general practice in past years.

Whether or not price uncertainty constitutes a factor in the desire of steel buyers to restrict inventories, the tendency in quotations recently has been toward firmness. This is reflected in indications that some products may be advanced next quarter. While a general increase is not looked for, certain of the less profitable items are thought likely to be affected.

Rail Orders Lighter; Some Roads Yet to Enter Market

Rail orders are light, but a number of roads have yet to enter the market for 1939 requirements. Backlogs are substantially heavier than a year ago, and there are some expectations 1939 production will double the extremely small 1938 output. Rail mill operations will provide increasingly greater support to steelmaking during coming weeks.

Railroad equipment markets are only moderately active. Outstanding is the proposal of the Milwaukee road to build 1000 box cars in its own shops and plans of the Chicago & North Western to order 900 freight cars. The latter also may buy 20,000 tons of rails.

Smaller volume of new inquiries for fabricated structural shapes and concrete reinforcing bars is without influence on output of these products, since releases against heavy tonnages booked previously are expanding. At the same time, residential building activity is quickening.

Outlook for heavy rolled products also is aided by shipbuilding now under way or in prospect for the navy and commercial lines.

Automobile assemblies dipped 4640 units to 79,860 last week, compared with 59,100 a year ago and 95,698 the corresponding 1937 period. The decrease largely was due to Ford's curtailment from 21,750 to 16,600. General Motors increased from 34,065 units to 34,715, with Chrysler down from 20,645 to 19,745.

Tin plate production is up to a new high for the year to date at 52 per cent on further gains in demand. Additional improvement is in sight with the approach of the more active season for food packing.

Foundry Operations Slow To Gain; Pig Iron Steady

Pig iron shipments so far this month compare favorably with the January daily average, with only small change indicated in totals for the two months. Foundry operations are slow to expand.

Favorable implications are drawn from the recent tendency of ingot production to edge upward, since a February rise in the past frequently has been indicative of additional betterment in March and April. A year ago steelmaking was declining and for the week was 31 per cent. Two years ago the rate was 83.

Gains in operations last week were well distributed. These included 1 point at Pittsburgh to 47 per cent, 1.5 points at Chicago to 52.5, 1 point in eastern Pennsylvania to 37, 2 points at Wheeling to 66, 3 points at Birmingham to 83, 5 points at St. Louis to 55 and 1 point at Youngstown to 45. Buffalo was down 2 points to 35 and Detroit was off 5 to 89. Unchanged districts were Cleveland at 56.5, Cincinnati at 55 and New England at 70.

Scrap is steady in most areas and stronger in several. A 50-cent advance at Chicago raises the scrap composite 17 cents to $14.96. The finished steel composite is unchanged at $56.50.

COMPOSITE MARKET AVERAGES

	Feb. 18	Feb. 11	Feb. 4	One Month Ago Jan., 1939	Three Months Ago Nov., 1938	One Year Ago Feb., 1938	Five Years Ago Feb., 1934
Iron and Steel	$36.38	$36.36	$36.35	$36.36	$36.39	$38.90	$31.30
Finished Steel	56.50	56.50	56.50	56.50	56.68	61.70	51.10
Steelworks Scrap..	14.96	14.79	14.75	14.77	14.58	13.54	11.72

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Feb. 18, 1939	Jan. 1939	Nov. 1938	Feb. 1938
Steel bars, Pittsburgh	2.25c	2.25c	2.25c	2.45c
Steel bars, Chicago	2.25	2.25	2.25	2.50
Steel bars, Philadelphia	2.57	2.57	2.57	2.75
Iron bars, Terre Haute, Ind.	2.15	2.15	2.15	2.35
Shapes, Pittsburgh	2.10	2.10	2.10	2.25
Shapes, Philadelphia	2.215	2.215	2.215	2.465
Shapes, Chicago	2.10	2.10	2.10	2.30
Plates, Pittsburgh	2.10	2.10	2.10	2.25
Plates, Philadelphia	2.15	2.15	2.15	2.445
Plates, Chicago	2.10	2.10	2.10	2.30
Sheets, hot-rolled, Pittsburgh	2.15	2.15	2.15	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.20	3.20	3.45
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.50	3.80
Sheets, hot-rolled, Gary	2.15	2.15	2.15	2.50
Sheets, cold-rolled, Gary	3.20	3.20	3.20	3.25
Sheets, No. 24, galv., Gary	3.50	3.50	3.50	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.90
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.10	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.45	2.75

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$37.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	43.00	47.00

Pig Iron

	Feb. 18, 1939	Jan. 1939	Nov. 1938	Feb. 1938
Bessemer, del. Pittsburgh	$22.34	$22.34	$22.34	$25.26
Basic, Valley	20.50	20.50	20.50	23.50
Basic, eastern, del. Philadelphia	22.34	22.34	22.34	25.34
No. 2 foundry, Pittsburgh	22.21	22.21	22.21	25.21
No. 2 foundry, Chicago	21.00	21.00	21.00	24.00
Southern No. 2, Birmingham	17.38	17.38	17.38	20.38
Southern No. 2, del. Cincinnati	20.89	20.89	20.89	23.89
No. 2X, del. Phila. (differ. av.)	23.215	23.215	23.215	26.215
Malleable, Valley	21.00	21.00	21.00	24.00
Malleable, Chicago	21.00	21.00	21.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	28.34	30.24
Gray forge, del. Pittsburgh	21.17	21.17	21.17	24.17
Ferromanganese, del. Pittsburgh	85.27	90.25	97.77	107.49

Scrap

Heavy melting steel, Pittsburgh	$15.75	$15.60	$15.15	$14.15
Heavy melt. steel, No. 2, E. Pa.	13.25	13.25	12.75	13.25
Heavy melting steel, Chicago	14.25	13.75	13.85	12.15
Rails for rolling, Chicago	17.25	17.75	17.75	15.25
Railroad steel specialties, Chicago	16.25	16.00	16.05	14.85

Coke

Connellsville, furnace, ovens	$ 3.75	$3.75	$3.75	$4.25
Connellsville, foundry, ovens	5.00	5.00	5.00	5.25
Chicago, by-product fdry., del.	10.50	10.50	10.50	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.15c
Chicago, Gary	2.15c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown, O.	2.15c
Youngstown, O.	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh	3.20c
Chicago, Gary	3.20c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown, O.	3.20c
Youngstown, O.	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chicago	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New York, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c
Pacific coast points	2.70c

Iron

Terre Haute, Ind.	2.15c
Chicago	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.05c
Chicago, Gary, Buffalo Cleve., Birm., Young., Sparrows Pt.	2.05c
Detroit, delivered	2.15c
Gulf ports	2.40c
Pacific coast ports, f.o.b. car docks	2.50c
Philadelphia, del.	2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham	1.90c
Detroit, delivered	2.00c
Gulf ports	2.25c
Pacific Coast	2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.45
Cement coated nails	$2.45

(Per pound)

Polished staples	3.15c
Galv. fence staples	3.40c
Barbed wire, galv.	3.20c
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

*Delivered.

Alloy Bars (Hot)

(Base, 3 to 25 tons)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.80c
Detroit, delivered	2.90c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 1500-4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring flats	0.15
6100 bars	1.20
6100 spring flats	0.85
Cr. N., Van.	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Electric furnace up 50 cents.

Piling

Pittsburgh	2.40c
Chicago, Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot Strip, 12-inch and less

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Youngs., Pitts., Chicago, Birm.	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c
Worcester, Mass.	3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$40.00
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00

Cents per pound

Angle bars, billet, mills	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chicago, Birmingham	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs., 20 lbs., up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	65-5-5 off
Do. larger, to 1-in.	60-10-5 off
Do. 1⅛ and larger	60-5-5 off
Tire bolts	50-5 off

Stove Bolts

In packages with nuts attached 75 off; in packages with nuts separate 75-12½ off; bulk 85 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5-5 off
Elevator bolts	50-10-5-5 off
Plow bolts	65-5-5 off

Nuts

Semifinished hex.	U.S.S.	S.A.E.
6-inch and less	65-5	70
⅞—1-inch	60-10	65
1⅛ and larger	60-5	60-5

Hexagon Cap Screws

Milled	50-10 off
Upset, 1-in., smaller	65-10 off

Square Head Set Screws

Upset, 1-in., smaller	73-10 off
Headless set screws	62-10 off

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75	off

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In.	Blk.	Galv.
⅛	63½	54
¼	66½	58
1—3	68½	60½

Iron

¼	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½	
2, lap weld	60	
2½ to 3, lap weld	63	
3½ to 6, lap weld	65	
7 and 8, lap weld	64	
10-inch lap weld	63½	
12-inch, lap weld	62½	

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B

Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅝-inch incl.	43.00
Do., over ⅝ to 47/64-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	5.75c

Per ton, bulk, f.o.b. port

Sulphate of ammonia	$28.00

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.75	23.25	22.25	23.75
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:

Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.87	.....	.....	.....
Boston from Everett, Mass.	23.25	23.75	22.75	24.25
Boston from Buffalo	23.25	23.75	22.75	24.24
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birminghom	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.24	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	21.50	21.50	21.00	.....
St. Louis from Birmingham	†21.12	.....	20.62	.....
St. Paul from Duluth	23.63	23.63	.....	24.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $26.50, base; $27.74 delivered Philadelphia.

Gray Forge		Charcoal	
Valley furnace	$20.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	20.50	do., del Chicago	28.34
		Lyles, Tenn.	23.50

†Silvery

Jackson county, O., base: 6-6.50 per cent $25.50; 6.51-7—$26.00; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 8.51-9—$28.00; 9-9.50—$28.50; Buffalo, $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickest magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$21.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $80.00
Do., del. Pittsburgh 85.27

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman, 2½ carbon 88.00
2% carbon, 93.00; 1%, 103.00
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.65-1.70

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.75c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract, any quantity, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do., less-ton lots 8.25c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.05
Do, smaller lots 2.15

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, carlots, 2 x ⅛-in., lb. 14.00c
Do, 2% 12.50c
Spot ¼c higher

Silicon Briquetes, contract, carloads freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, bulk freight allowed, lb. 4.50c
Ton lots 5.00c
Less-ton lots 5.25c
Spot ¼c higher

Zirconium Alloy, 12-15%, contract, carloads, gross ton $97.50
Do, spot 102.50
34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

—The Market Week—

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Struc-tural Shapes	Floor Plates	Sheets Hot Rolled	Sheets Cold Rolled	Sheets Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.61
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.50
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.33
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.62
Detroit	3.43	3.58	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	3.82	3.82	3.80	3.83	5.43	3.57	....	4.57
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.30	4.30	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.00	4.15	4.15	3.95	3.95	5.71	3.90	....	5.25
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	3.85	4.65	4.65	3.80	3.80	5.75	4.10	....	4.60
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	3.95	....	5.25
Seattle	4.30	4.50	5.85	4.05	4.15	5.90	3.95	....	5.25
Portland, Oreg.	4.00	4.40	6.10	4.00	4.00	5.20	3.95	6.50	4.75
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	4.00	4.00	5.60	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed) 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars 2300	SAE Cold Drawn Bars 3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	....	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	....	....	....	....	....	....
Norfolk, Va.	....	4.60	....	....	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	3.60	3.58	7.57	6.17	5.92	7.30	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.64	4.00	7.60	6.20	8.79	9.34	8.94	7.54
Milwaukee	....	4.18	3.93	7.48	6.08	5.85	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.60	....	....	....	....	....	....	....
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	....	4.90	....	....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
Los Angeles	4.45	6.50	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

* Based on minimum quantity.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Feb. 16

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channe or North Sea ports, gross tons **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$23.45 5 0 0	$16.83	1 19 6
Basic bessemer	....	15.98	1 17 6
Hematite, Phos. .03-.05	26.97 5 15 0*	.....	.....
Billets	$34.59 7 7 6	$38.34	4 10 0
Wire rods, No. 5 gage	53.35 11 7 6	43.66	5 2 6
Standard rails	$44.56 9 10 0	$48.99	5 15 0
Merchant bars	2.30c 11 0 0	1.95c to 2.05c	5 0 0 to 5 5 0
Structural shapes	2.09c 10 0 0	1.90c	4 17 6
Plates, †¼ in. or 5 mm.	2.29c 10 18 9	2.19c to 2.39c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.72c 13 0 0	2.93c	7 10 0°
Sheets, gal., 24 ga., corr.	3.29c 15 15 0	3.48c	9 3 0
Bands and strips	2.77c 13 5 0	2.05c	5 5 0
Plain wire, base	4.08c 19 10 0	2.39c to 2.83c	6 2 6 to 7 5 0
Galvanized wire, base	4.86c 23 5 0	3.07c to 3.17c	7 17 6 to 8 2 6
Wire nails, base	.....	2.73c to 2.93c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 4.73 1 0 3	.....	.....

British ferromanganese $80.00 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$23.22	4 19 0(a)	$15.85	598	$16.90	500	$25.29	63
Basic bess. pig iron	21.69	4 12 6(a)	.....	...	.....	...	27.90	(b)69.50
Furnace coke	5.39	1 4 2	5.96	225	7.27	215	7.63	19
Billets	34.59	7 7 6	25.04	945	29.07	860	38.74	96.50
Standard rails	1.99c	9 10 0	1.56c	1,300	2.06c	1,375	2.38c	132
Merchant bars	2.42c	11 12 0††	1.44c	1,202	1.65c	1,100	1.98c	110
Structural shapes	2.17c	10 8 0††	1.41c	1,173	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5 mm.	2.29c	10 19 3††	1.82c	1,515	2.06c	1,375	2.29c	127
Sheets, black	3.08c	14 15 0§	2.17c	1,805‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.61c	17 5 0	3.24c	2,700	4.13c	2,750	6.66c	370
Plain wire	4.08c	19 10 0	1.98c	1,650	2.48c	1,650	3.11c	173
Bands and strips	2.58c	12 7 0††	1.71c	1,340	1.95c	1,300	2.29c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 75 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1	†12.00
Bos. dock No. 1 exp.	13.00-13.50
New Eng. del. No. 1	14.00
Buffalo, No. 1	13.75-14.25
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	14.00-14.50
Chicago, auto, no alloy	12.50-13.00
Chicago, No. 2 auto	11.50-12.00
Cincinnati, dealers	11.50-12.00
Cleveland, No. 1	13.50-14.00
Cleveland, No. 2	12.50-13.00
Detroit, No. 1	10.00-10.50
Detroit, No. 2	9.00- 9.50
Detroit (industrial)	10.50-11.00
Eastern Pa., No. 1	15.00-15.50
Eastern Pa., No. 2	13.00-13.50
Federal, Ill.	11.50-12.00
Granite City, R. R.	12.25-13.00
Granite City, No. 2	11.25-11.75
Los Angeles, No. 1	12.50-13.50
Los Angeles, No. 2	11.00-11.50
N. Y. dock No. 1 exp.	12.00-12.50
Pitts., No. 1 (R. R.)	16.25-16.75
Pittsburgh, No. 1	15.50-16.00
Pittsburgh, No. 2	14.75-15.25
St. Louis, R. R.	12.50-13.00
St. Louis, No. 2	12.00-12.50
San Francisco, No. 1	12.00
Seattle, No. 1	12.00
Toronto, dirs. No. 1	9.75-10.25
Valleys, No. 1	14.50-15.00

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	13.00-13.50
Chicago, dealer	12.00-12.50
Cincinnati, del.	11.00-11.50
Cleveland	13.50-14.00
Detroit	11.75-12.25
E. Pa., new mat.	15.50
E. Pa., old mat.	11.00-11.50
Los Angeles	12.50-13.00
Pittsburgh	15.50-16.00
St. Louis	9.50-10.00
Valleys	14.25-14.75

BUNDLED SHEETS

Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Cleveland	10.00-10.50
Los Angeles	14.00
Pittsburgh	14.75-15.25
St. Louis	7.50- 8.00
Toronto, dealers	4.00

SHEET CLIPPINGS, LOOSE

Chicago	8.50- 9.00
Cincinnati, dealers	7.00- 7.50
Detroit	8.50- 9.00
†Los Angeles	3.75- 4.00
St. Louis	7.00- 7.50

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	12.50-13.00
Cincin., No. 1, deal.	8.00- 8.50
Cincinnati, No. 2	3.50- 4.00
Cleveland, No. 2	8.00- 8.50
Detroit, No. 1, new	10.00-10.50
Valleys, new, No. 1	13.75-14.25
Toronto, dealers	4.00

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	7.00- 7.50
Chicago	6.75- 7.25
Cincinnati, dealers	4.75- 5.25
Cleveland	7.50- 8.00
Detroit	5.75- 6.25
Eastern Pa.	9.00- 9.50
Los Angeles	4.50- 5.00
New York	†3.50- 4.00
Pittsburgh	9.50-10.00
St. Louis	3.00- 4.00
Toronto, dealers	4.00- 4.50
Valleys	9.00- 9.50

SHOVELING TURNINGS

Buffalo	7.25- 8.00
Cleveland	7.50- 8.00
Chicago	8.50- 9.00
Detroit	6.50- 7.00
Pitts., alloy-free	11.25-11.75

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	7.00- 7.25
Cincinnati, dealers	3.50- 4.00
Cleveland	8.00- 8.50
Eastern Pa.	6.50- 7.00
Detroit	5.75- 6.25
New York	†2.50- 3.00
Pittsburgh	8.25- 8.75
Toronto, dealers	5.00- 5.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	13.50-14.00
East. Pa., elec. fur.	13.00-13.50
St. Louis	9.50-10.00
Toronto	4.00- 4.50

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†6.00- 6.25
Buffalo	7.50- 8.00
Chicago	5.50- 6.00
Cincinnati, dealers	3.50- 4.00
Cleveland	8.00- 8.50
Detroit	5.75- 6.25
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.50- 3.00
Toronto, dealers	3.50

RAILROAD SPECIALTIES

Chicago	16.00-16.50

ANGLE BARS—STEEL

Chicago	15.50-16.00
St. Louis	13.50-14.00

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.00-16.50
Chicago, leaf	15.75-16.25
Eastern Pa.	17.00-17.50
Pittsburgh	17.50-18.00
St. Louis	15.00-15.50

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	17.00-17.50
Chicago (3 ft.)	16.00-16.50
Chicago (2 ft.)	16.50-17.00
Cincinnati, dealers	16.75-17.25
Detroit	16.50-17.00
Los Angeles	15.00-15.50
Pitts., 3 ft. and less	18.00-18.50
St. Louis, 2 ft. & less	16.25-16.75

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.00-14.50
Cleveland	17.00-17.50
Pittsburgh	17.50-18.00
St. Louis	13.75-14.25
Seattle	16.00

FROGS, SWITCHES

Chicago	14.00-14.50
St. Louis, cut	13.75-14.00

ARCH BARS, TRANSOMS

St. Louis	14.00-14.50

PIPE AND FLUES

Chicago, net	9.00- 9.50
Cincinnati, dealers	7.25-7.75

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	8.50- 9.00
Cincinnati, dealers	7.00- 7.50
Eastern Pa.	13.50-14.00
New York	†8.50- 9.00
St. Louis	9.00- 9.50

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	15.50-16.00
St. Louis, No. 1	10.75-11.25
St. Louis, No. 2	12.25-12.75
Toronto, No. 1 dlr.	8.00

FORGE FLASHINGS

Boston district	†8.00- 8.25
Buffalo	12.00-12.50
Cleveland	12.00-12.50
Detroit	10.00-10.50
Los Angeles	9.00
Pittsburgh	14.50-15.00

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	17.00-17.50
Pitts., billet, bloom, slab crops	18.75-19.25

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.00-16.50
Eastern Pa.	17.50-18.00
Pittsburgh	17.50-18.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.00-17.50
New York	†14.50-15.00
Eastern Pa.	17.00-17.50
St. Louis	16.50-17.00

STEEL CAR AXLES

Birmingham	†15.00-16.00
Buffalo	16.50-17.00
Boston district	†16.00-16.50
Chicago, net	18.00-18.50
Eastern Pa.	21.00-21.50
St. Louis	17.00-17.50

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	13.50-14.00

SHAFTING

Boston district	†15.25-15.50
New York	†15.50-16.00
Eastern Pa.	20.50-21.00
St. Louis, 1¼-3¾"	17.00-17.50

CAR WHEELS

Birmingham	†13.50-14.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	13.50-14.00
Chicago, rolled steel	15.00-15.50
Cincin., iron, deal.	13.50-14.00
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	17.00-17.50
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	17.50-18.00
St. Louis, iron	14.50-15.00
St. Louis, steel	15.00-15.50

NO. 1 CAST SCRAP

Birmingham	†13.00-13.50
Boston, No. 1 mach.	†10.50-10.75
N. Eng. del. No. 2	12.00-12.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.50-15.00
Buffalo, mach.	15.50-16.00
Chicago, agri. net	10.50-11.00
Chicago, auto net	13.00-13.50
Chicago, railr'd net	11.00-11.50
Chicago, mach. net	12.00-12.50
Cincin., mach. deal	13.50-14.00
Cleveland, mach. net	16.75-17.25
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	14.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.25-15.75
San Francisco, del.	13.50-14.00
Seattle	12.00-14.50
St. Louis, cupola	11.75-12.00
St. Louis, agri. mach.	14.00-14.50
St. L., No. 1 mach.	14.50-15.00
Toronto, No. 1, mach., net	12.00-13.00

HEAVY CAST

Boston dist. break.	†10.00-10.25
New England, del.	12.50-13.00
Buffalo, break.	11.00-11.50
Cleveland, break, net	13.00-13.50
Detroit, auto net	13.00-13.50
Detroit, break	9.50-10.00
Eastern Pa.	15.50
Los Ang., auto, net	13.00-13.50
New York, break.	†11.00-11.50
Pittsburgh, break	13.25-13.75

STOVE PLATE

Birmingham	†7.50- 8.00
Boston district	†8.00- 8.25
Buffalo	13.00-13.50
Chicago, net	8.50- 9.00
Cincinnati, dealers	7.00- 7.50
Detroit, net	8.50- 9.00
Eastern Pa.	13.50
New York, fdy.	†10.00-10.50
St. Louis	7.50- 8.00
Toronto dealers, net	7.50- 8.00

MALLEABLE

Birmingham, R. R.	†10.50-11.00
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	15.00-15.50
Cincin., agri. deal.	12.00-12.50
Cleveland, rail	15.00-15.50
Eastern Pa., R. R.	15.00-16.50
Los Angeles	17.50-18.00
Pittsburgh, rail	14.25-14.75
St. Louis, R. R.	12.50-13.00

Iron Ore

Lake Superior Ore

Gross ton, 51½%

Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbes.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbes.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	12.50-13.00
Swedish low phos.	12.50-13.00
Spanish No. Africa basic, 50 to 60% nom.	11.00
Tungsten. sh. ton. unit, duty pd. nom.	19.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	30.00-31.00
So. African, 50-52% nom.	30.00-31.00
Indian, 49-50%	29.00-30.00

Sheets, Strip

Sheet and Strip Prices, Pages 74, 75

Pittsburgh — Automotive buying of flat-rolled steel continues in relatively small lots, but such orders are fairly numerous and give the appearance of an attempt to level out purchasing. One interest, for instance, is buying twice a month instead of monthly or less often, as formerly. This situation is ascribed in part to firmness of prices, as well as to unwillingness to anticipate future needs. Sheet production has varied only moderately the past few weeks, holding between 55 and 60 per cent, with strip output between 40 and 45. Galvanized sheet operations have been advancing gradually, recently being slightly under 60.

Cleveland — Specifications are tapering, principally because of lighter demand from automotive parts interests. Late February or early March is expected to see an upturn in automotive needs. Consumer inventories generally are adjusted closely to early requirements, this being reflected in requests for prompt delivery on new business. Prices are firm, though large tonnages to provide a thorough test are absent.

Chicago—Except for a few instances of heavier orders, sheet and strip demand continues light. Requirements of some farm equipment builders are slightly larger, while needs of steel drum makers are gaining. Automotive buying is steady, but is largely for early needs.

Boston — Demand for sheets continues slack, only a few outstanding orders appearing, including one for 150 tons of blue annealed of welding quality, for shipment before March 1. Most consumers are operating with moderate inventories, the same applying to warehouses. The recent flurry in tack plate has declined. Requirements of the shoe industry, which is busy, are slack, due to substantial stock held by the leading producer of shoe machinery manufacturing equipment. Inquiry is expected shortly for close to 1500 tons of license tag stock for five New England states.

New York—Sheet buying is showing greater improvement. Some sellers report orders coming out in decidedly better volume, with some good business from oil companies for asphalt drums and much better specifications from electric refrigerator manufacturers and makers of certain other household appliances.

Galvanized sheet producers have withdrawn the jobbers' functional allowance of $2 on sheets and $4 on roofing. Base prices now apply on carlot shipments direct to consumers or to stock. However, a $2 discount is allowed in some instances on less-carlot shipments.

Philadelphia — Makers of galvanized sheets plan practically to eliminate jobber allowances. Tentatively a $2 allowance is eliminated on material for stock or direct shipment to consumers; $2 is allowed on less carloads and nothing on carloads or more. Miscellaneous sheet buying is improving, including additional buying by stove makers which were thought previously to have covered sufficiently. Prices are decidedly firmer, including galvanized in the southeastern area. There are indications an advance of $1 or $2 a ton may be effected next quarter.

Buffalo—New business is slow to expand and production has slackened somewhat with the decline in backlogs. The letdown reflects quiet in demand from consumers other than automotive.

Cincinnati—Sheet demand is well sustained at slightly above the late January level. Buying of galvanized sheets is believed inspired by reports of a coming price advance. Automotive specifications are slower this month but are counted on to lead a general expansion the next few months.

St. Louis—Specifications the first half of February were as good or better than a month ago, but new business has declined. Receipts by stove makers are off, while farm equipment and household equipment manufacturers are taking larger lots. Automotive strip releases are lighter.

Birmingham, Ala.—While production of sheets continues the capacity mark set months ago, little output of strip is evident with the exception of cotton ties in small quantities to building up reserve stocks. Roofing sheets continue to lead demand although quite a tonnage of manufacturers sheets is being produced.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 75

Bolt, nut and rivet shipments are steady, but with new orders slow backlogs continue to decline. New business largely is for immediate needs and is well diversified. Automotive demand is sustained and is relatively most active, although a slight increase in railroad business is noted. The latter is chiefly for repair work. Structural demand is somewhat heavier. While some low-price orders still are on books, quotations on new business are steady.

Plates

Plate Prices, Page 74

Chicago — Plate demand is sustained or heavier. Public works projects continue an important factor and pipe line tonnage shows signs of further increase. Railroads have a fair amount of potential business in freight cars now pending. A large plate inquiry will result from decision of the Union Pacific to build 2000 cars in its own shops.

Boston — Outstanding plate inquiry involves close to 800 tons for oil tanks for Quincy, Mass., with 200 tons placed for fabrication, oil storage units for Concord, N. H. Shipyard releases are steady. Miscellaneous buying is slightly heavier. Boiler shops with few exceptions have small backlogs. Railroads are releasing little tonnages.

New York — Plate specifications are barely steady at a low rate. Railroads and the oil industry refrain from active buying and demand from tank and boiler makers is slow. Ship tonnage consists chiefly of releases against old contracts, although some important new tonnage is pending. A European inquiry, involving 4000 tons of ship plates, is being figured.

Philadelphia—Navy specifications for plates are more active and some steel has been placed by private yards for navy work which is being rushed. Bethlehem Steel Co. is low on two 6000-ton light cruisers bid Feb. 15, and it is likely two similar vessels will be placed with navy yards. It is understood 15,000 tons of plates were released recently against private shipwork. Railroad buying is inconsequential but miscellaneous work is better.

Washington—Bethlehem Steel Co. is apparent low bidder on two navy cruisers, bids Feb. 15. Federal Shipbuilding and Dry Dock Co., Kearney, N. J., also bid. Bethlehem bid on adjustment provision, providing for fluctuation in labor and material costs, $12,898,000 for one or $11,695,000 for each of two. Federal's bids on the same basis were $14,200,000 for one and $12,950,000 for each of two.

San Francisco—Demand for plates is confined almost entirely to carload lots or less. So far this year 11,448 tons have been placed, compared with 10,386 tons for the corresponding period in 1938.

Birmingham, Ala. — Plates are holding consistently to the recently

improved production rate and there is reason to believe output will be well maintained during first half, at least, especially if anticipated tonnage develops in shipbuilding and from likely new railroad business.

Plate Contracts Placed

150 tons, two tanks, Publicker Commercial Alcohol Co., Philadelphia, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Plate Contracts Pending

400 tons, 1,000,000-gallon elevated tank and tower, Tucson, Ariz.; bids opened.

Bars

Bar Prices, Page 74

Pittsburgh — Bar prices are firm in both hot-rolled and cold-drawn products. The latter reflect strength which has not been evident for an extended period. Automotive demand is expected to move up by the end of this month. Backlogs currently are scant among hot mills, with cold-finishing divisions reporting some tonnage on hand. Miscellaneous business, making up most tonnage, covers only immediate needs and is for prompt delivery.

Cleveland — Bar mill operations have shown little change so far this month. Improved demand during early spring is expected to result from increased consumption among farm equipment builders and automotive suppliers.

Boston—Buying of alloy steel bars is relatively active, both as to orders and tonnage, with forging shop consumers taking fair shipments. Demand for cold finished material, however, is slow despite slightly better consumption by textile machinery builders, who are operating mostly on inventories as far as bar needs. Buying of merchant steel bars is also spasmodic. Browne & Wales, Boston warehouse, booked close to 100 tons for state of Massachusetts scraper blades. Bar prices, notably alloys, are steady.

New York — While still limited, bar demand has shown a modest increase so far this month. Principal buying is in the special bars, particularly for airplane manufacturers and machine tool builders. Shipyard specifications are well maintained. Railroad releases continue light.

Philadelphia — Plain carbon bars continue relatively slow, but some activity is noted in hot-rolled alloy and cold drawn specifications. A large part of it is attributed to government buying. Warehouses are placing some fill-in tonnages.

Buffalo—Bar production is steady, with somewhat better demand appearing from airplane manufacturers, who are experiencing brisk operations in this area. Shipments to automotive interests are maintaining recent gains but show no further pickup.

St. Louis—Recent betterment in bar demand is ascribed chiefly to miscellaneous users. Cold-drawn and alloy material is moving in fair volume. Several carload shipments to Arkansas and Illinois oil fields are reported. Warehouse stocks are light, with new buying looked for early in March.

Birmingham, Ala.—Bar output, currently estimated at 80 per cent of capacity, is fairly well divided between manufacturers of agricultural implements and concrete reinforcing bars, a greater part of which is going into highway construction.

Pipe

Pipe Prices, Page 75

Pittsburgh — February pipe business appears likely to show little change from January. Oil country goods have been slightly more active lately, but this is seasonal and volume is small. Business is widely distributed and mostly small orders. The price situation is good. While some recurring weakness has appeared in secondary markets, mill quotations are firm and jobber easiness is less noticeable.

Cleveland—Jobbers' shipments of standard steel pipe have leveled off at somewhat below the January level. While little change is indicated the remainder of February, a seasonal recovery is expected next month. Better activity in cast pipe inquiries, currently quiet, also is looked for in March.

Boston—A few car-lot orders for steel pipe are appearing for oil needs, including one at Quincy, Mass.; also 3000 feet, 22-inch for Saugus, Mass., the latter going to National Tube Co. Sales from jobbers' stocks, are fairly well maintained with prices generally firm, exceptions being some districts in Connecticut, meeting competition with New York. Cast pipe demand has also stepped up, the outstanding inquiry being 2500 tons, 6 to 12-inch for Bellingham, Mass., bids in. This may go composition material on an alternate. New Haven, Conn., placed 1100 tons of large sizes.

New York — While specifications for merchant pipe are seasonally light, a fairly large improvement is expected with the spring expansion in building operations. The building outlook is the most encouraging in several years.

Birmingham, Ala.—Pipe tonnage is somewhat better maintained than had been expected, some sizable business coming from the Pacific Coast involving distribution of approximately 1300 tons between National and American Cast Iron Pipe companies here. Operations are on a four day schedule.

San Francisco — Although demand for cast iron pipe remains quiet numerous inquiries have come out for carload lots. Awards aggregate 459 tons and brought the total for the year to 4959 tons, compared with 2571 tons for the corresponding period in 1938. Portland, Oreg., has just taken bids on 143 tons.

Seattle—Inquiry is not active and no large tonnages are up for bids. Spokane, Wash., has awarded 550 tons, 6 and 8-inch cast iron, for first half year extensions, to Hughes & Co. representing Pacific States Cast Iron Pipe Co., Provo, Utah. Washington WPA, Seattle office, received figures Feb. 15 for furnishing 112 tons of 6 and 12-inch pipe.

Cast Pipe Placed

550 tons, 6 and 8-inch for Spokane, to Hughes & Co., Spokane, for Pacific States C. I. Pipe Co., Provo, Utah.

Cast Pipe Pending

143 tons, Portland, Oreg.; bids opened.
112 tons, 6 and 12-inch for Seattle WPA branch; bids in.

Rails, Cars

Track Material Prices, Page 75

Rail buying, which was active since the first of the year, is in a lull, though several important lines have not placed their requirements. Difficulties in financing has held back some programs, which are expected to come out before long. Rail mills have better backlogs than last year. Chicago & North Western plans buying 20,000 tons when court approval has been obtained.

Chicago, Rock Island & Pacific is asking bids on two diesel-electric streamlined trains of seven cars each for service between Chicago and Denver. The road already has six streamliners in service on other runs.

American Car & Foundry Co., New York, has been given permission by interstate commerce commission to construct 15 tank cars with fusion welded tanks for experimental purposes in transporting petroleum

products. Five similar welded cars will be built by General American Transportation Corp., Chicago, under the same permission.

Chicago, Milwaukee St. Paul & Pacific plans construction of 1000 box cars and 75 cabooses at its shops at West Milwaukee, contingent on court approval and ability to finance. Remodeling of 25 passenger coaches is also to be undertaken.

Chicago Motor Coach Co. has been authorized by Illinois commerce commission to purchase 50 diesel-powered buses, which it is understood will be placed with Yellow Truck & Coach Mfg. Co., Pontiac, Mich.

Car Orders Placed

American Car & Foundry Co., New York, 15 tank cars with fusion welded tanks; five of same design, General American Transportation Corp., Chicago; for experimental purposes, under authority of interstate commerce commission.

John Morrell & Co., Ottumwa, Iowa, 100 refrigerator, to General American Transportation Corp., Chicago.

Car Orders Pending

Chicago, Milwaukee, St. Paul & Pacific, 1000 box cars, 75 cabooses; court approval asked.

Chicago, Rock Island & Pacific, two seven-car streamlined trains; bids asked.

Locomotives Pending

Chicago, Rock Island & Pacific, two 2000-horsepower, high speed, diesel-electric; bids asked.

Rail Orders Pending

Chicago & North Western, 20,000 tons; included in budget.

Buses Booked

American Car & Foundry Motors Co., New York: Six 41-passenger for Bee Line Inc., Rockville Center, N. Y.; two 35-passenger for Carolina Coach Co., Raleigh, N. C.; one 36-passenger for Santa Fe Trail Transportation, Wichita, Kans.; one 36-passenger for Williamsport Transportation Co., Williamsport, Pa.

Twin Coach Co., Kent, O.: Thirty-four 27-passenger for York Railways, York, Pa.; ten 31-passenger for Southern Indiana Gas & Electric Co., Evansville, Ind.; ten 35-passenger for Philadelphia Rural Transit Co., Philadelphia; ten 41-passenger for Capital Transit Co., Washington.

Wire

Wire Prices, Page 75

Cleveland—Merchant wire specifications are encouraging but are somewhat lighter than recently. Requirements of automotive supplies have varied little the past few weeks, with no sustained improvement seen until March. Inventories of dealers are well balanced and comparatively small. Prices of merchant wire products have firmed materially since early January.

New York—Shipments of wire products so far this month are well above incoming business, due to fairly substantial buying early this year. Business more recently has been little more than steady, except for better demand from the furniture trade for spring wire and reed wire for the textile industry. Prices generally are steady despite shading on some merchant items.

Birmingham, Ala.—Wire products, following the pace set weeks ago, are consistently in demand with production estimated at not less than 75 per cent. Movement, however, continues in comparatively small lots.

Tin Plate

Tin Plate Prices, Page 74

Tin plate demand and production continue to climb, operations now being estimated at 52 per cent. Most business represents general line can requirements, and a large tonnage is being placed for immediate needs

"Take it where it's hottest"
Perkins Man Coolers create refreshing re-circulation of air without chilling drafts.
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Behind the Scenes with STEEL

Sleepytown

■ For a brief ten minutes last week we drifted through a sea of billowy white clouds, chucked beautiful maidens under their dimpled chins, and sipped sweet nectar from a silver goblet. Cares and worries vanished; peace had indeed at last come to our overworked body and soul. A brief ten minutes, and then the white clouds slowly changed to a blank plaster ceiling, the gorgeous gals became fat and forty-ish and the sweet nectar was nothing more than a flat-tasting mouth wash. Thus, as it must to all men, there came last week to Shrdlu the first encounter with laughing gas and a relieved farewell to three unfriendly wisdom teeth.

Well Liked

■ STEEL's warehouse price table has been on the receiving end of some lovely bouquets lately. Leading warehouse interests are telling us such nice things as: *We like your method of quoting warehouse prices very well, indeed . . . It is the best reporting in any of the trade publications . . . Well presented and most helpful . . . We like this feature in* STEEL *very much . . . In my opinion, your present form of tabulating warehouse prices excels that of any other publication I have seen.*

Well Read

■ But of all the commending letters for many weeks now our pet is from the Virginian who wrote: *We look upon* STEEL *as our bible, and read it thoroughly. I would have a hard time locating my bible, but I always know where the last issue of* STEEL *can be found.*

This Wireless Age

■ The February issue of *The Yellow Strand,* house organ of Broderick & Bascom Rope Co., carries an interesting yarn about one George B. Jones who arises refreshed from his wire-coiled mattress, bangs down the window on its wire-sash cord, and raises the shade by its wire spring. Cleansed with soap from a wire holder, he anchors his socks with wire fastened garters, and pulls on his wire-nailed shoes. Friend Jones then shaves himself with a wire-corded electric razor, removes wire pins from his clean shirt and dons a suit from the wire hangers in the closet. With wire-framed spectacles on his sleepy face, he checks the wire hands on his watch to see if the wire springs are keeping the correct time, and sits down in the wire-screened breakfast room, opposite his wife who looks trim and neat in her wired "foundation". This goes on practically indefinitely but you probably have the idea by now. Jones gets down to the office through a maze of wire, buys a lot of B & B wire all day and then relaxes by the radio in the evening and muses dreamily about this wonderful wireless age!

Massachusetts Cousin

■ Some years ago *Time* magazine hired a finger print expert to dig up a lot of old copies of *Time* and check the number of different finger prints on the pages to determine how many readers perused each copy. Much to the chagrin of all concerned, the expert uncovered one unmistakable toe-print which put an entirely different light on the whole thing. STEEL hires no detectives; simply asks subscribers directly who reads STEEL each week. However, we were no less perturbed than by a toe-print last week to receive from a good Massachusetts subscriber a list of ardent readers including one office cat named Shrdlu —who is behind the scenes, they say. We have spent three sleepless nights and four worried days trying to decide if we have been complimented or just taken for a New England sleigh ride.

—SHRDLU

of packers. Orders from consumers other than canmakers also have increased lately. Sellers anticipate a further gain in total business as the food packing season broadens. Container releases from breweries are heavier. Producers are expected to open books shortly for shipments beyond the current quarter.

Shapes

Structural Shape Prices, Page 74

New York—Structural inquiry and buying are light. Fabricators' backlogs are beginning to decrease although shops entered the month with a heavy backlog. Mills are also rolling more tonnage against public works contracts booked several weeks ago. Pending bridge needs are smallest in a long period. Fabricated steel prices continue easy.

Pittsburgh — New construction work is better this week, with private projects accounting for more than half the new inquiries. Of about 13,000 tons announced recently, nearly 8000 tons is for private work. Largest of the new public jobs is a state bridge over Green river, Livermore, Ky., calling for 1300 tons. The influx of private work is the only bright spot in an otherwise drab outlook. It is hoped there will be enough work coming out to maintain the momentum supplied by government work.

Cleveland—Structural awards continue to lag behind expectations, due principally to the failure of private work to develop. Interest centers in the West Third street easterly extension to the Main street bridge project, here, involving 1600 tons, for which bids are due this week. Larger fabricators are fairly busy on relatively heavy backlogs, but the reverse is true among the smaller fabricators and this condition is playing an important part in an unstable price structure. Bethlehem Steel Co., Bethlehem, Pa., booked the largest award last week, 245 tons for a waterworks

Shape Awards Compared

	Tons
Week ended Feb. 18	**9,961**
Week ended Feb. 11	**10,385**
Week ended Feb. 4	**20,545**
This week, 1938	**12,814**
Weekly average, year, 1938	**21,566**
Weekly average, 1939	**24,491**
Weekly average, January	**32,362**
Total to date, 1938	**103,739**
Total to date, 1939	**171,440**

Includes awards of 100 tons or more.

improvement porject, Sandusky, O.

Chicago—Inquiries continue light, but an upturn in awards is noted. Industrial construction is at a higher level than for some time, although it still does not compare favorably with public projects. Construction work at Chanute field, Rantoul, Ill., for hangars, technical schools, barracks and other buildings has lent considerable support to the structural and reinforcing markets here.

Philadelphia—Pending work, both private and public, has increased. Celanese Corp., Pearisburg, Va., takes bids March 7 on six buildings requiring a substantial tonnage. Dates for bids are due shortly on two bridges requiring 1000 tons or more each, along with several small structures. A nearby shipyard plans additional ways and the navy yard also will be expanded.

Buffalo—Structural steel inquiries continued to expand as several more school jobs were put up for bids, while numerous small projects added considerably to the aggregate volume of tonnage. Practically all projects are backed by government funds, although a scattering of private industrial undertakings are also pending.

St. Louis—Interest in structural steel centers on 3000 tons for the Blue river bridge substructure at Kansas City, Mo., bids for which will be taken in March. Private building projects are almost entirely absent.

Birmingham, Ala. — Substantial shape business has developed over the past few weeks, considerable tonnage going into highway and bridge work.

San Francisco—Few structural awards totaled only 918 tons, bringing the aggregate for the year to 16,998 tons, compared with 7283 tons for the same period last year. American Bridge Co. secured 528 tons, including 155 tons of sheet piling, for a bridge over the Little Colorado river near Winslow, Ariz. Consolidated Steel Corp. took 125 tons for high school buildings at Whittier, Calif. Bids open on March 1 for 307 tons for a crossing in Berkeley, Calif.

Seattle—No heavy tonnages are pending but local shops have a fair volume of work in hand. Pacific Car & Foundry Co., Seattle, has been awarded 125 tons for a Washington state bridge in Adams county. Charles A. Powers, Spokane, has the contract to construct a steel girder undercrossing in Spokane county, Wash., requiring 210 tons of shapes. Navy department has called new bids at Washington, D. C., Feb. 17, for 50-ton jib cranes for three yards.

Shape Contracts Placed

1500 tons, bridge over Mississippi river, Miami, Mo., to Stupp Bros. Bridge & Iron Co., St. Louis.

1150 tons, Regency Park apartments, Kew Gardens, Long Island, N. Y., to Claremont Steel & Iron Co., New York.

760 tons, Delaware aqueduct, Putnam county, New York, to American Bridge Co., Pittsburgh.

665 tons, viaduct, Kansas City, Kans., to Kansas City Structural Steel Co., Kansas City, Kans.

600 tons, bridge, Cherry street, Milwaukee, for city, to Milwaukee Bridge Co., Milwaukee.

528 tons, including 155 tons sheet piling, Little Colorado river bridge near Winslow, Ariz., to American Bridge Co., Pittsburgh.

375 tons, Bowery Bay sewage treatment plant, Queens, New York, to American Bridge Co., Pittsburgh.

300 tons, Medium Security prison, Huttonsville, W. Va., for state, to American Bridge Co., Pittsburgh.

278 tons, building, Milwaukee, to Lakeside Bridge & Steel Co., Milwaukee.

265 tons, concession building, Rockaway Beach, N. Y., to Harris Structural Steel Co., New York.

245 tons, waterworks improvement, Sandusky, O., to Bethlehem Steel Co., Bethlehem, Pa.; through National Construction Co., Cleveland.

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DAMASCUS STEEL CASTING CO.
New Brighton, Pa.
(Pittsburgh District)

240 tons, bridge, Karnes county, Texas, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

240 tons, food terminal sheds, Denver, to Midwest Steel & Iron Co., Denver.

240 tons, hospital addition, Durham, N. C., to Ingalls Iron Works, Birmingham.

225 tons, high school, Midland, Mich., to Flint Structural Steel Co., Flint, Mich.

215 tons, gantry crane, for Newport News Shipbuilding & Dry Dock Co., Newport News, Va., to American Bridge Co., Pittsburgh.

200 tons, Ferrington high school, Honolulu, T. H., to unnamed interest.

200 tons, bridge, Ruleville, Miss., to Vincennes Steel Corp., Vincennes, Ind.

155 tons, Snelling Bridge, St. Paul, to Lakeside Bridge & Steel Co., Milwaukee.

150 tons, bridge, Mt. Clemens, Mich., to R. C. Mahon Co., Detroit.

150 tons, state highway bridge, Lanesboro, Iowa, to Bethlehem Steel Co., Bethlehem, Pa.

140 tons, building addition, for Minneapolis Star, Minneapolis, to Crown Iron Works, Minneapolis.

140 tons, reconstruction of bridge 10/75, Jenkintown, Pa., to American Bridge Co., Pittsburgh.

130 tons, nurses' home, Magee hospital, Pittsburgh, to Levinson Steel Co., Pittsburgh.

130 tons, high school addition, Thief River Falls, Minn., to Minneapolis-Moline Power Implement Co., Minneapolis.

130 tons, bridge, Owosso, Mich., to Fort Pitt Bridge Co., Pittsburgh.

125 tons, state undercrossing, Adams county, Washington, to Pacific Car & Foundry Co., Seattle; Henry Hagman, Cashmere, general contractor.

125 tons, high school buildings, Whittier, Calif., to Consolidated Steel Corp., Los Angeles.

125 tons, Billy Rose building, World's fair, New York, to Belmont Iron Works, Philadelphia.

120 tons, shop building, state hospital, Utica, N. Y., to Utica Steam Engine & Boiler Works, Utica, N. Y.

115 tons, dished heads, St. Paul, to Heggie Boiler Works.

Unstated tonnage, plant addition, Glenn L. Martin Co., Middle River, Md., to American Bridge Co., Pittsburgh.

Shape Contracts Pending

3600 tons, buildings, for Niles-Bement-Pond Co., West Hartford, Conn.

3000 tons, Kansas City, Mo., Blue river, bridge substructure; bids in March.

2300 tons, piling, bridge, Susquehanna river, Perryville, Md.; Rober C. Rietz, Lancaster, Md., general contractor, includes 700 tons of bars.

1350 tons, Kansas City, Kans., market and terminal building; Patty Construction Co., Kansas City, Mo., low.

1300 tons, state bridge over Green river, Livermore, Ky.

1000 tons, extension of shipbuilding ways, Portsmouth, N. H.

1000 tons, shipways navy yard, Portsmouth; bids bureau of yards and docks, Washington, Feb. 28.

854 tons, including 22 tons plates, overcrossing near Turlock, Stanislaus county, California; Union Paving Co., low.

800 tons, bridge, Maybeury, W. Va.; bids Feb. 17.

800 tons, buildings, for Great Lakes Coal & Coke Co., Niagara Falls, N. Y.

700 tons, viaduct for bridge 859, Mayberry, W. Va., for Norfolk & Western railroad.

625 tons, bridge, Castlemans Ferry, Va.; bids Feb. 17.

600 tons, manufacturing building, for R. C. A. Mfg. Co., Indianapolis.

600 tons, plant extension, for Lever Bros., Baltimore.

600 tons, central heating plant, war department, Chanute field, Rantoul, Ill.; bids Feb. 28.

525 tons, grade crossing eliminations, Passaic county New Jersey, for state.

500 tons, public school No. 18, Buffalo; bids postponed until April 11.

500 tons, bridge, Passaic county, New Jersey, route 6, sections 8A, 8B; bids Feb. 28.

500 tons, two jib cranes, for Mare Island, Calif., and Bremerton, Wash., navy yards; bids rejected, new bids Feb. 17.

500 tons, high school building, Colorado Springs, Colo.

450 tons, juvenile court building, Washington; bids Feb. 28.

450 tons, addition, Gallinger hospital, Washington; Bahen & Wright, Washington, low.

450 tons, fourth section, Chicago subway, Chicago.

400 tons, underpass, Baltimore & Ohio railroad, Lorain county, Ohio; bids March 15.

400 tons, alterations and additions to building, for Frank R. Jelleff, Washington.

307 tons, over-crossing, Berkeley, Calif.; bids March 1.

300 tons, city hall, Youngstown, O.; Schirmer Petterson Co., Cleveland, low.

300 tons, Union Pacific railroad train sheds, Council Bluffs, Iowa; bids in.

300 tons, central school, Nunda, N. Y.; bids March 2.

250 tons, building, for Arnold Hotel Inc., Cape May, N. J.

235 tons, bridge, Norfolk, Va.; bids Feb. 17.

225 tons, second section, Chicago subway, Chicago, M. J. Boyle & Co., general contractor.

210 tons, state girder undercrossing, Spokane county, Washington; Chas.. A. Powers, Spokane, general contractor.

200 tons, commissary building, Horn & Hardart Baking Co., Philadelphia; bids March 1.

200 tons, school, Rensselaer, N. Y., for board of education.

200 tons, school, Mason City, Iowa.

175 tons, garage addition, for Green Bus Lines, Jamaica, N. Y.

150 tons, undercrosssing, Ritzville, Wash., for state.

150 tons, supply storehouse, specification 8742, Mare Island navy yard, Calif.; general contract to MacDonald & Kahn Co. Ltd., Financial Center building, San Francisco, at $673,500.

150 tons, storage building, for Procter & Gamble Co., Chicago.

150 tons, loft building, for City Bank Farmers Trust Co., New York.

140 tons, bridge, Ironton, O., for city.

115 tons, H-columns, bridge at Guerneville, Calif.; bids opened.

100 tons, central school, East Bloomfield, N. Y.; bids Feb. 21.

Unstated tonnage, 50-ton jib cranes for Puget Sound, Mare Island and Boston navy yards; bids to Washington, Feb. 17.

Unstated tonnage, gate hoists for roller and radial gates, Roza project, Washington state; Foote Bros. Gear & Machinery Corp., Chicago, and General Iron & Steel Works, Portland, low on two units.

Unstated tonnage, official building, Hooker Electro Chemical Co., Niagara Falls; bids March 2, cost $125,000.

Unstated tonnage, buildings, Celanese Corp., Pearisburg, Va.; bids March 7.

Unstated tonnage, substructure, Potomas river bridge between Ludlow Ferry, Md., and Dahlgren, Va.; Merritt-Chapman & Scott Corp., New York, low at $2,088,000.

Reinforcing

Reinforcing Bar Prices, Page 75

New York—A slight improvement in small-lot buying is noted, but few tonnage inquiries for reinforcing steel are out. New Jersey is taking bids on a highway project taking close to 300 tons. Prices remain soft.

Pittsburgh—Reinforcing bar markets are somewhat stronger, and there are indications that firmer prices may be expected. Current placements are light, with the bulk of awards including jobs under 100 tons. Most work is publicly financed.

Cleveland — Outstanding recent award went to Bethlehem Steel Co., Bethlehem, Pa., involving 400 tons for a waterworks improvement, Sandusky, O. Public work continues to dominate inquiries and awards, with private industrial expansion remaining almost dormant. Fabricated prices continue unsteady despite efforts to bring about a more stable market.

Chicago—Reinforcing bar market is temporarily quiet. Considerable tonnage is still pending, but recent awards are light with most involving less than 100 tons. Public projects continue to taper, although purchases will continue to be made from time to time for several months. Heavier bookings are expected during the next two or three weeks from general sources. Interest at present centers on the billet steel bar requirements of the Chi-

Concrete Bars Compared

	Tons
Week ended Feb. 18	**4,302**
Week ended Feb. 11	**10,132**
Week ended Feb. 4	**11,699**
This week, 1938	**4,920**
Weekly average, year, 1938	**6,959**
Weekly average, 1939	**14,101**
Weekly average, January	**14,736**
Total to date, 1938	**42,206**
Total to date, 1939	**84,603**

Includes awards of 100 tons or more.

cago subway, on which a total of approximately 8000 tons still pends.

Philadelphia—Truscon Steel Co., Youngstown, O., has booked 700 tons for the Glenn L. Martin plant, Middle River, Md. Award will be made shortly for the Susquehanna bridge, Perryville, Md., for which Robert C. Reitz, Lancaster, has been awarded the substructure contract. Bids are due soon for several tunnel sections, requiring a large tonnage, for the Harrisburg-Pittsburgh express highway.

St. Louis—Demand for reinforcing bars, while showing moderate betterment, is still quiet. Lettings totaled about 600 tons. Bids for 250 tons for St. Louis postoffice garage have been postponed to Feb. 24.

San Francisco—Reinforcing steel bars booked totaled 2669 tons, bringing the aggregate for the year to 22,773 tons, compared with 17,950 tons for the same period a year ago. Judson Steel Corp., was awarded 362 tons and 260 tons for the bureau of reclamation for delivery at Los Mandos, Calif., and Consolidated Steel Corp. took 500 tons for high school buildings at Whittier, Calif. Bids open March 1 for 600 tons for a crossing at Berkeley, Calif.

Seattle—Local rolling mills have increased operations temporarily to roll heavy tonnages placed during the last month. Aside from additional reinforcing to be purchased for the Lake Washington pontoon bridge, little business is pending and no new projects of importance have developed. The Eugene, Oreg., water board has called bids Feb. 27 for construction of a 15-million gallon covered concrete reservoir involving 435 tons of reinforcing bars.

Reinforcing Steel Awards

700 tons, plant addition, Glenn L. Martin Co., Middle River, Md.; to Truscon Steel Co., Youngstown; through Turner Construction Co., Washington.

622 tons, bureau of reclamation, invitations B-47,440-A, and B-47,441-A, Los Mandos, Calif., to Judson Steel Corp., San Francisco.

559 tons, women's institutional buildings, federal project, Dallas, Tex.; to Texas Steel Co., Fort Worth, Tex.; through Delph-Bateson Co., Dallas.

500 tons, high school buildings, Whittier, Calif., to Consolidated Steel Corp., Los Angeles.

400 tons, waterworks improvement, Sandusky, O., to Bethlehem Steel Co., Bethlehem, Pa.; through National Construction Co., Cleveland.

400 tons, Stonewall Jackson high school, Charleston, W. Va., to West Virginia Rail Co., Huntington, W. Va.; Skilken Bros., Columbus, O., contractor.

260 tons, central highway office building, Richmond, Va., for state, to Bethlehem Steel Co., Bethlehem, Pa.; Virginia Engineering Co., Newport News, Va., contractor.

210 tons, Nehalem river bridge, Clatsop county, Oregon, to unnamed interest.

180 tons, Rantoul, Ill., hospital for Chanute Field, to Ceco Steel Products Corp., Chicago.

151 tons, over-crossing, Albany, Linn county, Oregon, to unnamed interest.

120 tons, John Simpson junior high school, Mansfield, O., to Pollak Steel Co., Cincinnati; William C. Hawkins Construction Co., Cleveland, general contractor.

100 tons, East St. Louis, Ill., police and fire station to Laclede Steel Co., St. Louis; through Dickie Construction Co., St. Louis.

100 tons, Little Colorado river bridge near Winslow, Ariz., to Columbia Steel Co., San Francisco.

Reinforcing Steel Pending

1900 tons, 3200-men barracks, Hickam Field, T. H.; general contract to Robt. E. McKee, 4700 San Fernando road, Los Angeles, at $1,158,720.

1542 tons, supply storehouse, specification 8742, Mare Island navy yard, California; general contract to MacDonald & Kahn Co. Ltd., Financial Center building, San Francisco, at $673,500.

1000 tons, bridge over Mississippi river, between Rock Island, Ill., and Davenport, Iowa.

900 tons, Delaware aqueduct, contract 318, board of water supply, New York.

700 tons, arch bridge over Bronx river valley, Westchester county, New York.

600 tons, over-crossing, Berkeley, Calif.; bids March 1.

490 tons, viaduct, Joplin, Mo.

435 tons, city water reservoir for Eugene, Oreg.; bids to J. A. McArthur, superintendent, Feb. 27; Stevens & Koon, Portland, engineers.

456 tons, 34 naval ammunition buildings, Hawthorne, Nev.; general contract to Wm. P. Neil, Los Angeles, at $399,000. Specification 8966.

400 tons, addition to plant of Coca Cola Co., Los Angeles; bids opened.

400 tons, sewage plant, Stevens Point, Wis.

350 tons, over-crossing, Stanislaus county, California; Union Paving Co. low on general contract.

295 tons, highway project, route 6, section 11A, Troy Brook to Bloomfield avenue, Essex-Morris counties, New Jersey; bids Feb. 24, Trenton, E. Donald Sterner, state highway commissioner.

280 tons, university building, Tulsa, Okla.

190 tons, T-beam state bridge, Snohomish county, Washington; A. D. Belanger, Seattle, general contractor.

180 tons, elementary school, Davenport, Iowa.

160 tons, plant superstructure, Fisher Body Co., Grand Rapids, Mich.

158 tons, superstructure for assembly shop, naval base, Alameda, Calif.; general contract to James I. Barnes Construction Co., Santa Monica, Calif., at $788,200.

150 tons, factory building, King-Seeley Corp., Ann Arbor, Mich.

150 tons, sewage disposal plant, Hicksville, O.

150 tons, central school, East Bloomfield, N. Y.; bids Feb. 21.

140 tons, garage, Des Moines, Iowa.

140 tons, school, Marquette street, Davenport, Iowa.

125 tons, juvenile court building, Washington; bids Feb. 28.

125 tons, city hall, Boone, Iowa.

112 tons, highway tunnel, Oregon state, for bureau of roads; Kuckenberg Construction Co., Portland, low.

100 tons, girls' vocational school, Toledo, O.

100 tons, bridge on cross county parkway, Dunwoodie, N. Y.

100 tons, public school No. 18, Buffalo; bids postponed until April 11.

100 tons, school, Corfu, N. Y.; Joseph P. Snyder, Buffalo, low.

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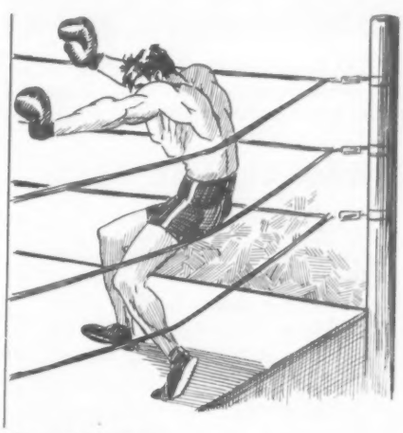

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Pig Iron

Pig Iron Prices, Page 76

Pittsburgh—Demand is slightly better, with radiator and sanitary goods makers showing principal improvement in foundry operations. Little iron is being bought in advance of early needs, most shipments being single cars. Carnegie-Illinois Steel Corp. has started a blast furnace, bringing the number of active stacks in this district to 20.

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Cleveland—Indications are for a gain of about 10 per cent in February shipments over January. Demand from automotive foundries is off slightly but is expected to improve during March. Operations of farm equipment makers are spotty, with small gains noted in a few instances. Heating equipment foundries are working four to five days weekly. Fill-in buying by consumers who underestimate first quarter needs is encouraging. Users stocks are relatively low.

Chicago—Shipments of pig iron will be slightly less this month when compared with January because of three fewer days. Daily rate, however, is approximately the same. Foundry melt is better in this area, reflected in improved shipments of by-product coke. Coke shipments for this month will compare favorably with the longer month of January.

New York—New orders and releases are increasing. Business still is relatively quiet, but some sellers already have booked more orders this month than in all of January. Specifications for machinery castings are outstanding, although the improved building outlook has raised demand from heating unit manufacturers to the best level in recent years. Export inquiry is light, with sellers at a large price disadvantage compared with figures named abroad.

Philadelphia — Inventories have declined so far this year, and with foundry operations well maintained additional buying is pending. Talk of higher prices next quarter has been discounted so far. Pipe shops have booked more business, which may be reflected shortly in more pig iron buying.

Buffalo — Shipments are about equal to the volume a month ago. Producers have a fairly large tonnage on books, with consumers ordering only enough for current needs. Demand from surrounding districts appears more active than in the immediate area. Jobbing plants are best buyers.

Cincinnati—Deliveries keep at the January level. Shipments reflect current consumption since foundries are carrying minimum inventories. Demand is heaviest for machine tool castings, with farm implement and heating equipment manufacturers slow to expand operations.

St. Louis—Shipments are moderately larger than a month ago. A fair volume of small-lot buying is being done, but tonnage still owed against last year's purchases is retarding new business. Steel and stove foundries are less active, although jobbing foundries and some specialty plants are busier. Stove makers have reduced production to two to three days weekly.

Birmingham, Ala.—Pig iron production was scaled down last week when Woodward Iron Co., blew out its No. 1 furnace to make extensive repairs and modernization estimated to cost $170,000. Production otherwise continues unchanged with 15 furnaces in blast.

Toronto, Ont.—Merchant pig iron demand is gaining, sales the past week being the highest so far this year at about 2500 tons. The melt for Ontario is near 65 per cent, with a higher rate in prospect shortly. Production is steady, four furnaces being active.

Scrap

Scrap Prices, Page 78

Pittsburgh—Scrap has a firmer tone, although the market is quiet. Price steadiness has been confirmed by recent mill purchases at $15.50 to $16 for No. 1 heavy melting steel, compared with previous orders between $15 and $15.50. Railroad specialties and low phosphorus grades are stronger despite quiet demand. Mills are not pressing heavily for shipment against old orders.

Cleveland—Purchase of 10,000 to 12,000 tons by an important Cleveland steelmaker several days ago is the sole feature of the scrap market. This tonnage of steelmaking grades is said to have been bought on the basis of $14.50 for No. 1. It was divided among several sellers.

Blast furnace material, No. 2 busheling and cast borings have been marked up 50 cents a ton to $8 to $8.50, and machine shop turnings and forge flashings have been advanced similarly.

Chicago — Accumulation of strength for some time in scrap here finally has forced up quotations of leading steelmaking grades 50 cents. No. 1 steel now is $14 to $14.50. Dealer prices also have firmed. The situation is mixed, with one mill understood to be offering a flat $14 and a purchase by an unnamed consumer reported at $14.50. Higher prices also have affected compressed sheets, angle bars, automotive heavy melting and short rails.

Philadelphia—Small sales of No. 1 steel have been made to district consumers at $15.50, but it is generally conceded larger lots would bring better prices. Several mills still are covered comfortably and are releasing shipments in fair volume. Several boats are loading or are due shortly, with export prices $13.25 to $13.50 on No. 2 material

and $14.50 to $15 for No. 1. The latter continues scarce and some dealers are holding for better prices.

New York—Scrap prices, untested on domestic business, are inclined to weakness on some grades, notably cast. Some heavy breakable cast is going at $15.50, delivered. Export buying is quieter, with $12 paid for most No. 1 steel.

Buffalo—The market is deadlocked in the absence of agreement between consumers and dealers on prices. As a result prices are largely nominal, with No. 1 steel quoted $13.75 to $14.25. Mills still are restricting shipments against old orders.

Detroit—Scrap movement continues light and buying apathetic. A list of Fisher bundles, totaling over 250 cars, was somewhat larger than expected. Bids had little effect on the quoted market. A few sales of heavy breakable cast have been made to local foundries with the start of work on 1940 model die programs.

Cincinnati—Scrap prices are unchanged, although lower bids are reported on railroad offerings. Mills are taking scrap regularly but show no interest in new commitments. Foundry buying is dull.

St. Louis — Scrap prices have weakened under the influence of light demand and heavy shipments by railroads. Reductions range from 25 cents to $1 a ton, with steelmaking grades showing the largest cuts. One exception to the lower trend is malleable scrap, which is scarce. This grade is up 50 cents.

Seattle—Japan is releasing credits and issuing permits for about 100,000 tons monthly but local exporters state that Pacific Coast dealers are out of line at $15 asked for No. 1 and $14 for No. 2 export, stating they are buying in the Gulf at $12.50 to $14 with ocean freights $5.25 against $6 from Pacific Coast ports. Local dealers justify prices by small stocks at tidewater and fair demand from melters.

Toronto, Ont.—Scrap demand is rising, with heavy melting steel active in the Hamilton area and heavier buying of steel turnings and bundles noted. Iron grades are moving freely when supplies are available. Scrap deliveries to dealers have been heavier lately. Prices are steady and unchanged.

Warehouse

Warehouse Prices, Page 77

Cleveland—Shipments by most warehouses are lighter than a month ago. Continuation of this trend the remainder of this month is expected to give February a decrease of about 20 per cent compared with January. An upturn is looked for in March.

Chicago—Business so far this month has held at January levels, but a tapering has been noted the past few days. The remainder of this month and early March are expected to be fairly quiet, with a pickup looked for thereafter.

Boston—Volume so far this month has been disappointing to most jobbers in New England, being somewhat below January. A substantial purchase of miscellaneous alloy steel has been made by the Watertown, Mass., arsenal, contracts going to Joseph T. Ryerson & Son Inc., Arthur C. Harvey Co., W. E. Clark & Co., Lukens Steel Co. and Crucible Steel Co. of America.

New York—Indications are February volume will be slightly under January, due in part to the shorter month, day to day orders coming in at about the same rate. However, volume has leveled off to that of late January. Heavier steels, notably structurals, are inclined to lag.

Philadelphia—Sales are moderately improved over January and a year ago but are not expanding as anticipated. It is reported sales of cold-rolled sheets may be placed on a basis similar to galvanized. The latter now is sold outside Philadelphia on a Sparrows Point, Md., base plus freight.

Buffalo—Warehouses find it difficult to maintain the January sales pace, volume being closer to that of a year ago. This is a common trend for this district, and recovery is expected with the approach of spring.

St. Louis—February shipments are slightly ahead of January and well above a year ago. Sales are small but widely distributed as to products. Plumbers supplies are more active, while a brisk call continues for oil country goods.

Cincinnati—Business is steady, with an encouraging gain shown compared with a year ago. Inquiries for building materials are beginning to improve.

Seattle—Volume of sales is slightly better than a month ago but seasonal spring buying has not developed. Unfavorable weather has retarded outdoor projects. Sheets and bars show the best turnover at present. Prices are stable in this territory.

Semifinished

Semifinished Prices, Page 75

Pittsburgh—Orders for semifinished steel were slightly heavier this week. Buying has been on a week to week basis, although the trend is unmistakably up in a slow steady climb.

Increases were most noticeable in releases by nonintegrated tin plate producers, in response to a rising tin plate production rate. Sheet bar tonnage is steady. In first half of February, tonnage for flat rolled products was slightly weaker than skelp and wire rods.

Direct effect of semifinished tonnage on the local ingot rate is evi-

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dent last week with lighter production schedules resulting from smaller semifinished demand late a week ago and early last week. The decline offset increases by mills not selling semifinished steel.

Ferroalloys

Ferroalloy Prices, Page 76

New York—Reflecting the slight rise in steelmaking operations, ferromanganese shipments so far this month have increased, but with February limited to 28 days, some sellers regard it doubtful if the monthly total will exceed that of January. Prices are unchanged at $80, duty paid, Atlantic and Gulf ports. Domestic spiegeleisen, 19 to 21 per cent, is holding at $28, Palmerton, Pa., and 26 to 28 per cent at $33.

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Steel in Europe

Foreign Steel Prices, Page 77

London—(*By Radio*)—Production of steel and pig iron in Great Britain in January showed a decided recovery from the low volume in December. Steel ingots and castings totaled 811,700 gross tons, a gain of 156,000 tons from 655,700 tons in December. Pig iron production at 500,500 tons was 54,700 tons above 445,800 tons in December.

Exports of steel and iron products in January were 120,020 tons, a decline of 45,980 tons from 166,000 tons in December. Imports gained 14,834 tons, from 52,300 tons in December to 67,134 tons in January.

Trade in foundry pig iron continues dull but hematite grades are more active. Steel markets are improving, with tonnages moving to South Africa and the Near East. Domestic activities are expanding, particularly at sheet mills, causing greater demand for semifinished output. Imports are being strictly controlled.

The Continent reports Holland and Scandinavia buying actively. A large order for shipment to Manchukuo has been partly lost to America.

Sir William Larke will head a delegation of seven business leaders which the Federation of British Industries is sending to Germany in March to negotiate with German industrialists on trade relations.

A comprehensive commercial agreement is to be arranged between a Polish delegation and the Soviet government, providing for most favored nation treatment, for one year, automatically renewed. Russia will take from Poland annually about 6,000,000 poods (36.113 pounds), one third each in coal, textiles and textile machinery.

Iron Ore

Iron Ore Prices, Page 78

New York — While consumer stocks of tungsten ore are slowly being reduced, there having been no important buying in many months, demand for this product continues decidedly dull. Prices in this country, therefore, are largely nominal.

Chinese wolframite for spot shipment, based largely on London quotations, is quotable here at nominally $19 for short ton unit, duty paid. Imported scheelite is about $1 higher and is being purchased in small quantities for more or less special applications.

Domestic scheelite of standard quality has been offered by at least one producer recently at $15.50, delivered eastern points, without takers. It appears that the market on this ore is holding nominally around $15 to $15.50. Some domestic producers are refusing to part with ore under $18. However, consumers, it is believed, would have no difficulty in shading this price in various quarters rather substantially.

So little actual buying is going on at present that it is difficult to gage the market on domestic scheelite with accuracy. In view of the steady, although slow, reduction in consumers' stocks, some trade leaders look for a rather appreciable improvement in demand within the next two or three months.

A much better demand for tool steel is in prospect for this year and it is believed that as soon as the excess stocks which have been carried for many months have been worked off, there will be a much improved activity in this line, which will be reflected all the way back to the raw ore.

Federal Restraint only Bar to 80-Billion Income

■ National income of 80 billion dollars, suggested recently by the President, is not an excessive aspiration, Cleveland Trust Co., Cleveland, states in its *Business Bulletin*. It was done in 1929 and there are 9,000,000 more people in the United States now. To attain this about 25 per cent more business must be done than in 1937.

The obstacle, the bank says, is relative unattractiveness of taking business risks. If prospects for profits could be restored to about former proportions national income of 80 billions would be easy and prompt.

If business men had a high degree of confidence in the future they would base policies on long-term expectations, build and equip factories to make new products developed in depression years. They would hire more workers and do things that characterize expanding enterprise, if they thought they could afford present risks in hope of future gains and believed they would be allowed to keep a reasonable share.

An 80-billion national income depends on expansion of business spending, which tends to be self-

perpetuating, and not on increased federal emergency spending, which has to be self-terminating. The one central control is the attitude of the federal government toward business profits, is the bank's conclusion.

Durable Goods Recovery Essential, Economists Sta

■ Urging transition from a pump-priming type of recovery to a true long-term business improvement, Farrel-Birmingham Co., Ansonia, Conn., has issued an economic study by Allen W. Rucker and N. W. Pickering. Their conclusion is that such a change cannot come about without normal rate of growth in durable goods industries.

Statistics presented by the authors show that in the two years, 1923 and 1929, relative proportions of manufacturing income in heavy and light goods divisions were approximately 53 and 46 per cent, respectively. In 1935 they were 45 and 54 per cent, respectively. Failure of payrolls in heavy industry to recover indicate a loss of ten billion dollars from 1933 to 1938, they state.

Five steps are listed as necessary for a sustained revival in durable goods. These include cessation of government competition with private industry; renunciation of regulative taxation; abandonment of experiments restricting private investment; curtailment of federal absorption of capital and credit for deficit financing; encouragement of class co-operation instead of class cleavage.

Nonferrous Metals

New York—Low price levels in London metal markets compared with those prevailing in this country continued to exert a depressing influence. With the equivalent of the London lead price dropping under the three-cent level, domestic producers lowered their prices 10 points on Thursday. Copper statistics for January, showing an increase in world refined stocks of 22,891 tons, received a bearish interpretation in London and drove the foreign price below the 10-cent level which previously had been the "bottom" of the foreign price field. An accumulation of more than 10,000 tons of tin in the buffer stock has tended to widen backwardation and to discourage much forward buying.

Copper—Export copper eased to around 9.92½c, c.i.f., before it recovered to around the 10-cent level on renewal of buying by Germany. Reported sales remained light in the domestic market at the 11.25-cent level although substantial tonnages of resale metal continued to be booked with prices during the week ranging from 10.25c, Connecticut to 10.50c at the week's close.

Lead—Prices declined to 4.60c, East St. Louis, on Thursday despite active sales on the previous day. Buying was also active after the revision. January statistics are ex-

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

Feb.	Copper Electro, del. Conn.	Copper Lake, del. Midwest	Copper Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
11	11.25	11.37½	10.12½	45.50	45.40	4.85	4.70	4.50	20.00	11.25	35.00
13	11.25	11.37½	10.12½	45.50	45.40	4.85	4.70	4.50	20.00	11.25	35.00
14	11.25	11.37½	10.12½	45.35	45.27½	4.85	4.70	4.50	20.00	11.25	35.00
15	11.25	11.37½	10.00	45.12½	45.05	4.85	4.70	4.50	20.00	11.25	35.00
16	11.25	11.37½	10.15	45.10	45.02½	4.75	4.60	4.50	20.00	11.25	35.00
17	11.25	11.37½	10.25	45.45	45.30	4.75	4.60	4.50	20.00	11.25	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 11.25c Conn. copper

Sheets

Yellow brass (high)	17.31
Copper, hot rolled	19.37½
Lead, cut to jobbers	8.00
Zinc, 100 lb. base	9.75

Tubes

High yellow brass	20.06
Seamless copper	19.87½

Rods

High yellow brass	12.62
Copper, hot rolled	15.87½

Anodes

Copper, untrimmed	16.62½

Wire

Yellow brass (high)	17.56

OLD METALS

Nom. Del. Buying Prices

No. 1 Composition Red Brass

New York	6.35-6.47½
Cleveland	6.75-7.00
Chicago	6.12½-6.37½
St. Louis	6.00-6.25

Heavy Copper and Wire

New York, No. 1	8.00-8.12½
Cleveland, No. 1	7.75-8.00
Chicago, No. 1	7.75-8.00
St. Louis	7.50-7.75

Composition Brass Borings

New York	5.50-5.75

Light Copper

New York	6.62½-6.87½
Cleveland	6.00-6.25
Chicago	6.12½-6.37½
St. Louis	6.00-6.25

Light Brass

Cleveland	3.25-3.50
Chicago	3.75-4.00
St. Louis	3.50-3.75

Lead

New York	4.10-4.35
Cleveland	3.50-3.75
Chicago	3.62½-3.87½
St. Louis	3.25-3.50

Zinc

New York	2.50-2.62½
Cleveland	2.00-2.25
St. Louis	2.00-2.25

Aluminum

Borings, Cleveland	6.25-6.50
Mixed, cast, Cleveland	6.75-7.00
Clips, soft, Cleveland	14.75-15.00
Mixed cast, St. Louis	7.00-7.25

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads	10.50
Standard No. 12 aluminum	12.75-13.25

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pected to show a decline in refined stocks which should offset some of the depressing weight of the London price.

Zinc—The foreign market continued to hold the domestic prime western price at the unfavorable 4.50-cent East St. Louis level. The galvanizing rate has increased to around 58 per cent of capacity, sustaining shipments at a steady rate, but consumers show only routine buying interest.

Tin — Prices fluctuated between 45.10c and 45.50c on Straits spot with the trend taking its clew from London. Fresh demand generally was disappointing in volume.

Antimony—Business was confined to only routine bookings at unchanged price levels. American spot in cases was quoted 11.25c, New York, while Chinese spot held nominally at 14.00c, duty paid New York.

Equipment

Cleveland — Machine tool and equipment inquiries continue to increase while orders are slightly heavier. Current inquiries are for heavier machinery than was the case in January and December. Dealers still encounter considerable resistance to closing contracts, but expect February to be at least as good a month as January. Aircraft and partsmakers are reported the most active buyers, although demand is fairly well diversified.

Chicago—Machine tool business is reported slightly off here in the past week although inquiries are coming in at the same volume and seem even more active. Closings, however, have been few but considerable business is pending on the market. Demand generally is quite diversified although a leading machine tool interest reports farm and road equipment makers' ordering better.

Seattle — Bonneville administration, Portland office, is actively in the market for equipment for its proposed power system radiating into Oregon and Washington. Bids are called March 6 for three 4000-kva outdoor type transformers for the Raymond, Wash., substation; three 2500-kva transformers for the Hood River, Oreg., station, Spec. 157; March 7, three 4000-kva transformers for Kelso, Wash.; Feb. 18 transformers for Eugene, Oreg. Bids are also out for panels, wire, conduits and other equipment. Same office has awarded contracts for circuit breakers as follows: Pacific Electric Mfg. Co., San Francisco, $90,000; Allis-Chalmers, $38,360; Westinghouse, $48,955. General Electric has the contract at $2,490,-999 to furnish four generators for the Shasta, Calif., power plant. Bureau of yards, Washington, will open bids March 1 for equipment for pumping plant No. 4, Puget Sound Navy yard, involving three 54-inch main pumps, various other pumping units, two sluice gates and numerous accessories.

Construction and Enterprise

Ohio

BREMEN, O.—Village, E. J. Young, clerk, contemplates building a water softening plant and will seek WPA allotment of funds. Engineer, C. T. Kaiser, Bremen.

CINCINNATI, O.—City, C. O. Sherrill, manager, is preparing preliminary plans for construction of sewers and a sewage disposal plant costing $1,512,650. Consulting engineers, George B. Gascoigne & Associates, Cleveland.

CORTLAND, O.—Village, Mack Cook, mayor, has $288,610 WPA allotment and will issue mortgage bonds in a $388,551 project for construction of a water system and a sewage disposal system comprising two plants. Will begin construction in March. Charles Bricker, village engineer.

EAST LIVERPOOL, O.—Ohio Power Co., Canton, O., Ralph Couch, division manager, will probably take bids about Feb. 21 on project to cost about $225,-000 and involving new substation, 22,000-volt line, improvement of other substations with automatic switches and new transformers.

GREEN SPRINGS, O.—Village, Ira Young, mayor, will probably soon take bids on Contract B in a project for improvement of its waterworks system at total cost of $45,000. Will issue $17,500 mortgage bonds. Consulting engineer, Floyd Browne, Marion, O. (Noted Jan. 23.)

MINSTER, O.—Village, Louis Drees, mayor, is completing plans and will take bids soon on materials for construction of sewerage system and sewage treatment plant costing $320,000. Champe, Finkbeiner & Associates, Toledo, O., consulting engineers.

NEW LONDON, O.—Village, C. A. Blackman, mayor, has completed plans and probably will soon take bids on constructing sewage system and sewage treatment plant to cost $131,818. Granville Scott, Norwalk, O., consulting engineer. (Noted Nov. 28.)

NEWTON FALLS, O.—Village, W. E. Bailey Jr., mayor, will probably take bids soon on construction of electric power plant and distribution system costing $205,000. Project includes new building, diesel engine generating equipment, switchboard and distributing system. Carl J. Simon, Van Wert, O., consulting engineer.

REPUBLIC, O.—Village, C. E. Womer, mayor, has approved bond issue in projected construction of a waterworks system costing an estimated $54,000. Includes wells, pumps, elevated tank and distribution system. Champe, Finkbeiner & Associates, Toledo, O., consulting engineers.

Maine

ROCKLAND, ME.—Knox Industries Inc. plans to erect a four-story brick and steel factory costing more than $50,000. Bunker & Savage, Rockland, architects.

Connecticut

SPRINGDALE, CONN. — Connecticut Power Co., P. M. Hatch, manager, Stamford division, Stamford, Conn., plans to build an electric power substation costing $125,000.

STAMFORD, CONN.—Bureau of streets, sewage and garbage is drawing preliminary plans for construction of a complete sewage disposal plant costing $2,-200,000.

Rhode Island

NORTH KINGSTON, R. I.—Town, J. P. B. Pierce, clerk, has preliminary plans for constructing a waterworks system, pumping station, wells, piping etc., to cost about $110,000. Fay, Spofford & Thorndike, Boston, engineers.

New York

ASTORIA, N. Y.—Department of public works, New York, has plans to build a sewage treatment plant here at cost of approximately $500,000.

BINGHAMTON, N. Y.—City will receive bids in spring on project for rehabilitation of its waterworks. PWA has allotted necessary funds. Barker & Wheeler, Albany, N. Y., engineers.

CLINTON, N. Y.—Village, A. W. Scoones, clerk, takes bids due March 1 on construction of a sewage treatment plant to cost $26,750. (Noted Jan. 16.)

LIVONIA, N. Y.—City will soon take bids on construction of a water filtration plant to cost more than $30,000. William Lozier, Rochester, N. Y., consulting engineer.

MT. VERNON, N. Y.—Mt. Vernon Iron & Steel Co. Inc. has been organized to deal in tools and machinery; capital, 100 shares no par stock. Morris Gelbman, 20 South Broadway, Yonkers, N. Y.

Pennsylvania

LINESVILLE, PA.—Borough has plans, to mature this summer, for a project involving construction of a sewage disposal plant costing $25,617. Borough engineering department is in charge.

YOUNGSVILLE, PA.—City proposes to construct sewers and a sewage disposal plant and seeks WPA funds. Will hold special election in March on $30,000 bond issue to provide its share of cost.

Michigan

GRAND RAPIDS, MICH.—Williams Machines Inc. has been incorporated with $50,000 capital to deal in machinery. W. F. Krauss, 23 Lafayette avenue, Grand Rapids, representative.

Illinois

CHICAGO—L. A. Young Spring & Wire Co., 9210 Russell street, Detroit, has awarded general contract for constructing a 113 x 300-foot factory costing about $100,000 to Clearing Industrial District, 6455 South Central avenue, Chicago.

Indiana

EVANSVILLE, IND. — Schnacke & Fawcett Mfg. Co. Inc. has been incorporated with capital of 1000 shares no par stock to manufacture tools, dies and other fabricated metal products. Walter H. Schnacke, 1721 South Elliott street, Evansville, agent.

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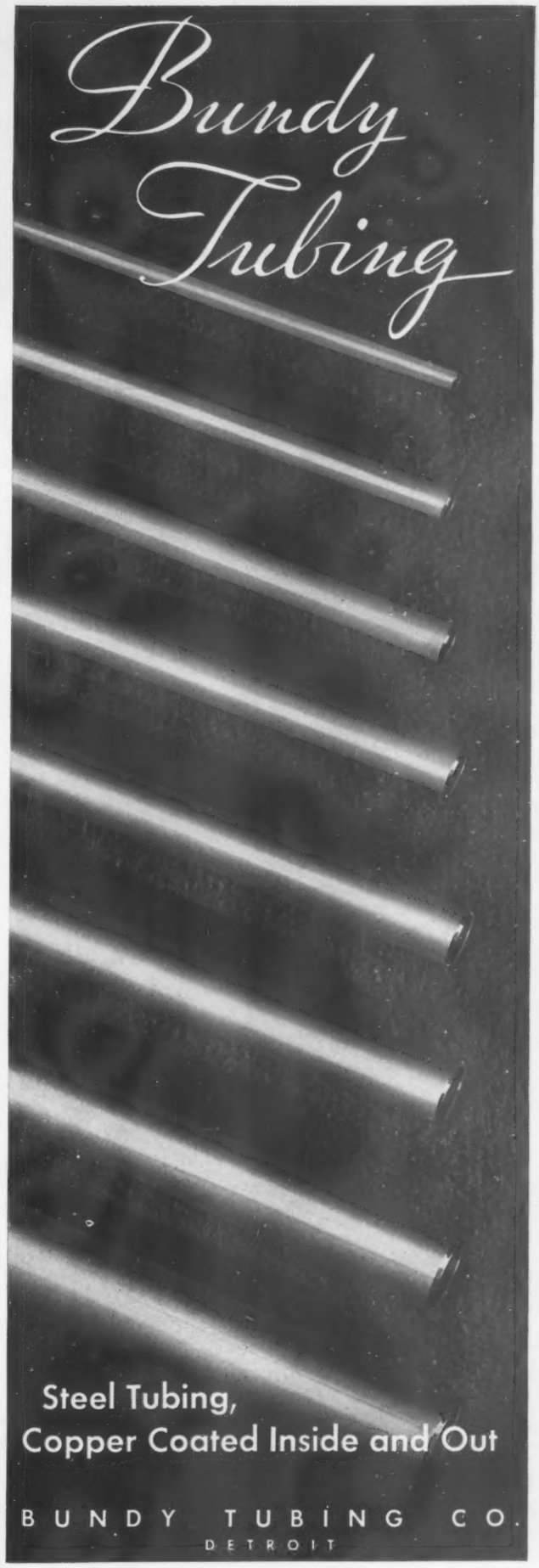

vester Co. has awarded a $50,000 contract to J. L. Simmons Co. Inc. 715 Union Title building, for construction of a one-story foundry building.

INDIANAPOLIS—American Iron & Metal Co. Inc. has been formed with 100 shares no par value capital stock to deal in iron, steel, manganese, copper etc. Representative, Sam Hollowitz, 960 Eugene street, Indianapolis.

Maryland

DENTON, MD.—REA has allotted a $144,000 loan to Choptank Co-operative Inc. for constructing 113 miles of rural electric power transmission lines serving 426 consumers.

District of Columbia

WASHINGTON — Navy department, yards and docks, takes bids on a steam-driven air compressor to be installed at Brooklyn, N. Y., navy yard. (Specification 9058.)

WASHINGTON — Navy department, bureau of supplies and accounts, takes bids to Feb. 24 on centrifugal pump, schedule 5493; and on steam winches, schedule 5511.

Kentucky

OWENTON, KY. — Owen County Rural Electric Co-operative Corp. Inc., Chester Roland, superintendent, has received $98,000 REA allotment to enable construction of rural electric transmission lines totaling 80 miles.

PADUCAH, KY. — Jackson Purchase Rural Electric Co-operative Corp. has been allotted $184,000 REA loan for construction of 150 miles of rural power lines in five counties to serve 784 consumers.

Florida

KEYSTONE HEIGHTS, FLA. — REA has allotted $162,000 to Clay Electric Co-operative association for construction of 182 miles of rural electric lines in three counties.

MELBOURNE, FLA. — City, Charles Stickel, manager, receives bids for constructing a water works treatment plant, new well, pump and appurtenances. G. A. Youngberg & Associates, Jacksonville, Fla., consulting engineers.

Georgia

ATLANTA, GA.—City, Lloyd Walker, purchasing agent, receives bids Feb. 27 for furnishing and installing in Hemphill pumping station a steam turbine-driven centrifugal pump with capacity of 40 million gallons daily.

AUGUSTA, GA.—City will receive bids Feb. 23 for construction of waterworks to cost $81,000. Roberts & Co., Atlanta, Ga., consulting engineers.

BAXLEY, GA.—City plans to make improvements in its water and sewerage systems and will submit proposal to issue bonds to finance project to voters at March 14 election.

KINGSLAND, GA.—City is receiving bids on construction of improvements in its waterworks at cost of $20,000. J. B. McCrary Co., Atlanta, Ga., consulting engineer.

NEWTON, GA.—City will accept bids Feb. 24 on construction of projected waterworks system which is estimated to cost about $23,500. J. B. McCrary Co., Atlanta, Ga., consulting engineers.

North Carolina

HARKERS ISLAND, N. C.—E. Davis has organized a rural co-operative to build transmission lines and a generating plant costing a total of $50,000. REA has allotted needed funds.

South Carolina

CHARLESTON, S. C.—South Carolina Public Service authority receives bids Feb. 28 for construction of Pinopolis lock, dam and power plant to cost an estimated total of $3,000,000. Harza Engineering Co., Charleston, engineer. (Noted Jan. 30.)

Missouri

KIRKWOOD, MO.—WPA has allotted funds to city to finance construction of a sewage disposal plant costing about $39,000.

NEVADA, MO.—City has plans underway for constructing a complete municipal sewage disposal plant and treating works which will cost an estimated total of $100,000.

SPRINGFIELD, MO.—City, W. C. Lohmeyer, utilities commissioner, is receiving bids until 10 a.m., Feb. 28, on remainder of work in connection with construction of a sewage disposal plant consisting of pumping station, grit chamber, mixing tank, roughing filters, clarifiers and pipe lines. Black & Veatch, Kansas City, Mo., consulting engineers.

Arkansas

PINE BLUFF, ARK.—C & L Rural Electric Co-operative Corp. will soon call for bids on construction of 250 miles of rural power lines in four counties. Has $253,000 REA loan. Will buy current from Arkansas Power & Light Co.

Minnesota

BLUE EARTH, MINN.—REA has allotted $121,000 to the Faribault County Co-operative Electric association, Carl Schneider, superintendent, to finance proposed construction of about 100 miles rural electric power transmission lines in Faribault county.

KENNEDY, MINN.—Village, Merle Johnson, clerk, is drawing plans for construction of water mains, chlorination plant and disposal system to cost $65,000. WPA funds allotted. P. C. Bettenburg Inc., St. Paul, consulting engineer.

STEPHEN, MINN.—City J. F. Yetter, clerk, has WPA funds and is preparing working plans for construction of a complete water treating plant and sewage disposal system to cost $80,000. P. C. Bettenburg Inc., St. Paul, consultant.

Texas

DALLAS, TEX.—Link-Belt Co., 413 Second street, has acquired site and plans to erect a two-story plant which will cost about $100,000.

JOHNSON CITY, TEX.—Pedernales Electric Co-operative Inc., Hugo Weinheimer, Stonewall, Tex., president, receives bids on individual contracts between Feb. 20 and 25 for rural electric distribution lines totaling more than 3600 miles. William G. Morrison, Waco, Tex., engineer.

Kansas

BURLINGTON, KANS.—Coffey County Rural Electrification co-operative has been allotted $120,000 REA loan for the projected construction of line improvements in the county. Paulette & Wilson, Salina, Kans., consulting engineers.

IONIA, KANS.—REA has allotted $155,000 to the Jewell-Mitchell Co-operative Electric Co., I. L. Rose, president, to finance construction of 136 miles of rural transmitting lines in four counties. Paul Hughes, Norton, Kans., consulting engineer.

Nebraska

CREIGHTON, NEBR.—Voters at recent election approved city's proposal to construct a sewage disposal plant with PWA assistance.

Iowa

CHARITON, IOWA—City, John Olson, clerk, will vote Feb. 28 on a $98,000 bond issue to finance purchase of private power plant and construct a new plant and distribution system. George McCarthy, Chariton, consultant.

Montana

FAIRFIELD, MONT.—Sun River Electrification association, E. P. Harwood, superintendent, has $54,000 REA allotment and will build 46 miles of rural electric lines in Teton county. John Hall, Fairfield, consulting engineer.

Nevada

PIOCHE, NEV.—Combined Metals Reduction Co., E. H. Snyder, Salt Lake City, Utah, general manager, plans to build a 1000-ton flotation mill on its mining property here.

Pacific Coast

COMPTON, CALIF.—Certificate to conduct light manufacturing and machine shop business under name of R & W Service, at 1816 North Long Beach boulevard, Compton, has been issued to the owners, Lawrence Reagan and Forrest Wilder.

EL MONTE, CALIF.—Certificate to conduct business under firm title of Pressteel Products Co., 1935 West Garvey street, El Monte, has been issued owners V. E. Louks, Don Bancroft, Oliver Steva and A. N. Davis.

MARTINEZ, CALIF.—Shell Co. of California, San Francisco, engineering department, is taking bids on extension to its motor laboratory at cost of $40,000.

VERNON, CALIF.—Stuard Oxygen Co., San Francisco, has awarded contract for construction of a 100 x 150-foot factory estimated to cost about $50,000, to Bechtel, McCone & Parsons, 601 West Fifth street, Los Angeles.

ASTORIA, OREG.—Hellstrom & Mittell, Astoria, have been awarded contract by Hanthorne Cannery to construct a cold storage warehouse equipped with refrigerating machinery and costing an estimated total of $30,000.

LA GRANDE, OREG.—City has PWA funds and proposes to build a water system costing $176,655. L. R. Stockman, Baker, Oreg., engineer in project.

WILLAMINA, OREG.—Olympia Veneer Co., O. C. Yocum, representative, has purchased a 20-acre site and has plans underway for constructing a veneer plant.

NEWPORT, WASH.—City is making plans to construct a trunk line sewer and sewage disposal plant and considers issuing bonds to finance. H. A. Sewell, city engineer.

SPOKANE—City proposes to make improvements in its water system and will supply $105,920 towards cost while WPA has approved an additional $119,680 grant.

YAKIMA, WASH.—Lindman Mfg. Inc., 1011 Third street, has been organized with $10,000 capital by J. G. Lindman and associates to deal in iron, steel and other metals.

READER Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Work-Sharing Hurts Labor?

To the Editor:

There are tendencies in America today against which we must be on guard. For manufacturers and employers, freedom of speech is, to a pretty large degree, merely a figure of speech. They are forbidden to talk to their employes about the subject that interests employes more than anything else, their jobs. If they do, they are assumed to be coercing them.

New jobs have been made possible by the development of labor-saving machinery. Development of labor-saving machinery has helped, not hurt, the American worker. By lowering production costs, labor-saving machinery has been largely responsible for the increase of 500 per cent in the past five years in production of mechanical rubber goods.

Such machinery has not cut down the number of production hours for labor. More labor hours are being expended in the rubber industry than ever before. Akron has the most skilled labor in the industry and it is unfortunate that inexperienced outside men have been permitted to come in to direct how that labor should be handled, when their only training in labor handling has been in coal mines or similar occupations.

The so-called "share the work" idea hurts the poor man, not the rich man. It hurts the faithful worker, who should be earning enough to enable him to start building a house and purchase other comforts, the production of which would give employment to other persons. Instead, it takes away his happiness by cutting his yearly wage down to a point where he can afford to buy only the bare necessities of life.

If the regular employes of any company were allowed to work a few extra hours a week during times of peak production they could be assured of stability of employment at comfortable wages in nearly every case. If, however, new workmen have to be added to the payroll when work is at the peak, and if the work to be done when production falls off must be shared among both old and new workers, then none will earn enough in a year to be comfortable.

In the past 28 years our company has laid men off only twice. Until the "share the work" idea came along, our workers were earning $1800 to $2000 a year and they were able to build or buy homes and have many of the comforts of life. Now, although we are paying as high as $1.56 an hour the average yearly wage is only $1200, because of the "share the work" idea.

I came home from Europe convinced that the most important thing for us to do, in America, is to learn our own particular jobs better. We must concentrate on better salesmanship, both at home and abroad. There are plenty of markets that haven't been touched yet.

W. O'NEIL

President,
General Tire & Rubber Co.,
Akron, O.

"Why Mark Up Prices?"

To the Editor:

Speaking of commodity prices in general, why increase them? You already know that I am not an economist.

Do the raw or crude materials, all of which we get from the atmosphere or Mother Earth, and from which everything is made, cost more when industrial activity is at 80 or 90 per cent than when industrial activity is at 30 or 40 per cent? It certainly does not cost any more per unit to produce them.

Who starts the upward trend of prices, and why? Somebody starts the ball rolling.

Does the ultimate consumer, on whom all industry must depend, get this difference so that he can buy more?

In our small business we, too, increase prices when industrial activity is up. Why? The ball has been rolling our way.

If business can profit when industrial activity is about 70 or 75 per cent, wouldn't it be most natural, more humane, and probably highly profitable in the long run, to reduce prices when industrial activity has reached about 80 or 90 per cent? Wouldn't this have a further "thawing" effect instead of a "freezing" one, as seems to be the case when prices are increased? Wouldn't this in itself have a tendency to effect savings for our industries in numerous ways? Wouldn't it make for industrial stability?

STILL THINKING

Lebanon, Pa.

Masterpiece, His Opinion

To the Editor:

Like previous years your Yearbook of Industry certainly is a masterpiece in statistics and other information which no doubt many people are glad to get and read. You fellows always do yourselves proud each year in getting out this particular issue. . . . I believe that you really have something to offer those in the steel industry and it is undoubtedly looked for by many of your readers.

L. A. HASTINGS

Publicity Manager,
Heald Machine Co.,
Worcester, Mass.

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Buffalo Galvanizing & Tinning Wks., Inc., Buffalo, N.Y.
Columbian Steel Tank Company, Kansas City, Mo.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
The Fanner Mfg. Company, Cleveland, Ohio
John Finn Metal Works, San Francisco, Cal.
Thomas Gregory Galvanizing Works, Maspeth, N. Y.
Hanlon-Gregory Galvanizing Co., Pittsburgh, Pa.
The Hodell Chain Company, Cleveland, Ohio
Independent Galvanizing Co., Newark, N. J.
International Derrick & Equipment Co., Columbus, Ohio
Joslyn Co. of California, Los Angeles, Cal.
Joslyn Mfg. & Supply Co., Chicago, Ill.
L. O. Koven & Brother, Inc., Jersey City, N. J.
Lehigh Structural Steel Co., Allentown, Pa.
Missouri Rolling Mill Corp., St. Louis, Mo.
The National Telephone Supply Co., Cleveland, Ohio
Penn Galvanizing Co., Philadelphia, Pa.
Riverside Foundry & Galvanizing Co., Kalamazoo, Mich.
San Francisco Galvanizing Works, San Francisco, Cal.
The Sanitary Tinning Co., Cleveland, Ohio
Standard Galvanizing Co., Chicago, Ill.
Wilcox, Crittenden & Co., Inc., Middletown, Conn.
The Witt Cornice Co., Cincinnati, Ohio

IF IT CARRIES THIS SEAL IT'S A JOB WELL DONE